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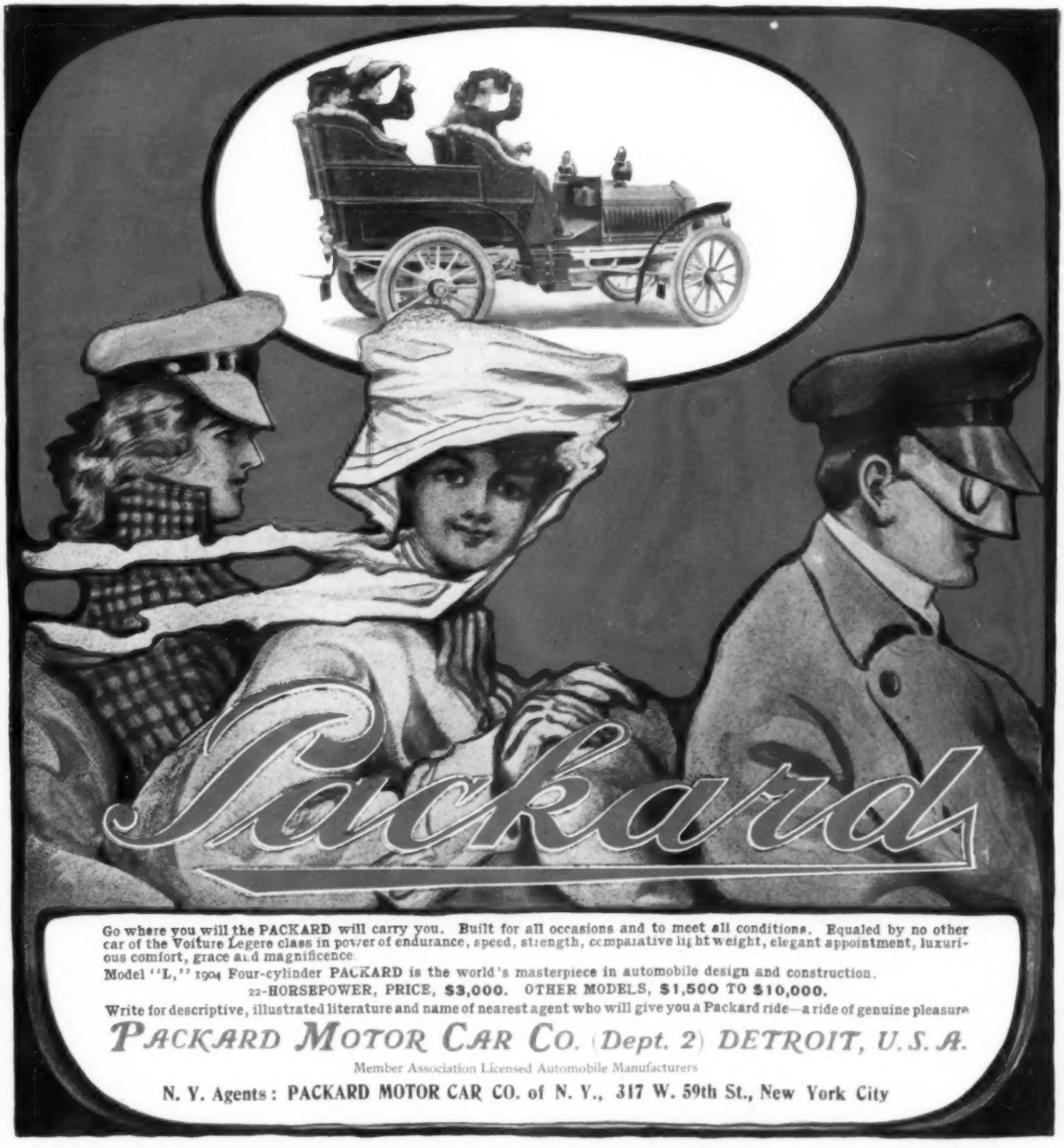

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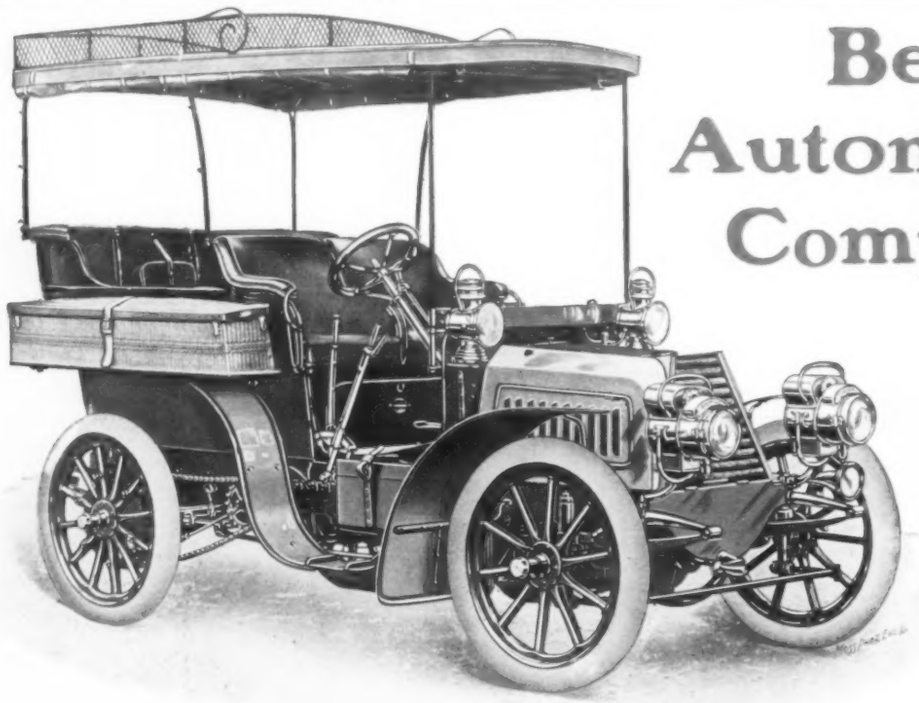

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THE AUTOMOBILE

WEEKLY NEW YORK—SATURDAY, JUNE 11, 1904—CHICAGO 10 CENTS

FRENCH G. B. ELIMINATION TRIALS.

By our own Special Correspondent.

PARIS, May 23.—The great month of automobile racing in Europe is now begun and all eyes are anxiously watching the competitors chosen to compete as well as the ones that are still to be chosen.

After the English trials already described in detail in these columns we report the French trials which took place with the utmost success last Friday, May 20, in the French Ardennes of automobile-racing fame.

The Ardennes are a hilly district, pretentiously called mountains by most French people, which we would compare with the American Catskills, with which they have many points of similarity.

The road chosen there is a closed "circuit" of a very accidental nature, the hills being numerous and the roads of a condition not nearly so good as the average French roads. The course chosen is not the same as the one selected in previous years for the well-known "Circuit des Ardennes" races, as the latter is of too good a condition, and the cars to be chosen for the Gordon Bennett were wanted to accomplish their performance on roads not better than, but rather inferior to, the Taunus course, so as to guarantee that they will be able to stand the strain of racing on the German road. Everything, however, had been provided to guarantee the safety of both competitors and public and it can be said that no race was ever run in any kind of sport for which more trouble had been taken and for which more money had been spent in preparing suitable ground.

THERY, WINNER OF FRENCH ELIMINATING TRIALS IN THE RICHARD-BRASIER CAR, ENTERING ONE OF THE CONTROLS.

In its form the course resembles a circle,

the circumference of which is 58.16 miles. Of this the portions passing through villages were neutralized to the extent of 3.20 miles, reducing the length of the actual speed course to 54.96 miles. To complete the trial, each car was required to go over the circuit six times, making a total of 348.96 miles at speed, and 19.20 miles in the controls. The time each car had to spend in the neutralized sections or controls was 25.5 minutes, making a fraction over 2½ hours for the entire race.

MEANS FOR LAYING THE DUST.

To prevent the raising of dirt and to guarantee the good condition of the road even in case of heavy rain, the entire course was tarred in a novel fashion, which proved absolutely satisfactory. Practically no dust was raised in any of the trial runs of the cars or in the race itself, and no mud whatever formed, although there were rather heavy falls of rain in the days preceding the event. The entire course was sprinkled on May 13 by fifty-two watering carts with a mixture of a new product, "Westrumite," of properties rather similar to those of tar, diluted with water in the proportion of 17 parts of "Westrumite" to 83 parts of water. This mixture is very fluid and easy to sprinkle. It gives the roads a brown color comparable to that of chocolate. Besides laying the dust, another advantage of this mixture is that it avoids the most painful and dangerous effect of a continuous white stretch of road on the driver's eyesight.

The turns were arranged so as to reduce as much as possible the chances of accidents, the ditches on each side of the road having been filled with dirt and made hard exactly like the ordinary road surface, while the convexity of the road was made to disappear on one side so as to make a slightly upturned curve, facilitating the turning at high speeds. Pieces of white canvas forming a sort of apparent wall were stretched on the outside of each curve, thus warning the driver from a distance and preparing him to take the curve.

COURSE KEPT CLEAR.

The circulation of cyclists, pedestrians, carriages and motor cars other than those specially on duty for the service of the race was strictly forbidden after 4 a. m. on the day of the event, and it was also forbidden to stand or circulate on the sides of the road between the ditches, which always border French roads on each side at a distance of about 8 to 12 feet from the road proper. Patrols of police were sent over the course after 3 a. m. to that effect.

MAZAGRAN THE STARTING POINT.

At Mazagran the starting point was selected. Here the road was bordered by about two kilometers of fence and approaching this point there was a stretch of road on which arrangements were made for timing a flying kilometer.

At the club enclosure at Mazagran an accurate platform scales was installed with certified weights, and here all the cars were weighed and inspected. This comprehended the examination of brakes, and of reversing gears under motion, and the direction of the outlet for exhaust gases. To see that this was not directed toward the ground each car was driven over a large sheet on which sawdust had been sprinkled.

All the cars entered were ready for the inspection. The Turcat-Mery looked very queer with a hood back of the radiator fashioned like a shark's head with big teeth in the open jaws and a very wicked looking eye embossed and painted on each side. It was not highly mechanical looking.

From an inspection of the cars the facts set forth in the accompanying table were here procured. See page 620.

THOUSANDS OF SOLDIERS ON DUTY.

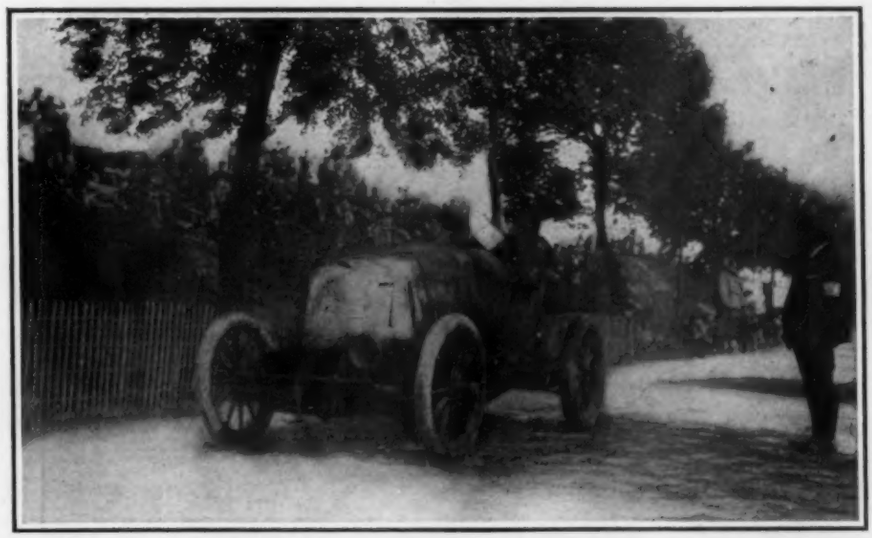
The entire course was guarded by 5,000 soldiers, for which the French Automobile Club had to pay $5,000, which went afterward to the men. These soldiers from a neighboring garrison town, Verdun, camped for several days in the neighborhood of their positions on the day of the race.

No matter how great all these provisions to safeguard the course may have been, there is no doubt that they would have been almost useless had not the tremendous crowd, which many special trains and auto caravans had brought, understood that it was its duty for the sake of the industry and for the sake of many lives, to keep a behavior strictly in accordance with the instructions displayed and advertised so that dreadful fatalities such as happened in last year's Paris-Madrid race might be avoided.

CHARACTERISTIC SCENE IN THE ENCLOSURE AT MAZAGRAN ON THE FORENOON OF THE FRENCH RACE.

ATTEMPTS TO CRIPPLE CARS.

Incidentally, however, it is well to call attention to a fact which proves that even in France, where the automobile has come absolutely into the customs of every-day life, and is not any more considered a public danger, as many do still seem to consider it in the United States and in other European countries, there are still ill-intentioned persons who mischievously endanger the life of the drivers. For many days during which the cars were trying the course and receiving their last test, boards, horse shoes, and similar objects covered with brand new nails, points up, were scattered on the course and caused tire accidents of the most dangerous character, one of them proving almost fatal. It took not less than the intervention of the police and very strict repres-



SALLERON, WHO WON SECOND PLACE IN THE MORS, PASSING THROUGH CONTROL.

sive measures to stop the criminal practice, several manufacturers entering cars in the race having made a collective complaint to the organizers of the event.

Start of the Race.

The start was given on Friday, May 20, at 5 a. m., to the first car, De Dietrich, driven by Baron De Forest, the competitors starting at two minute intervals. Mazagran, where the start took place, is a solitary spot in a plain, marked by only two or three small peasants' cottages. The starter was M. Tampier, the famous French starter and horologist, who organized the entire timing and neutralizing system, which worked as follows:

Three slips were prepared for each car:

(1) One slip on which the time of start and arrival were recorded, thus giving by substraction the gross time.

(2) One slip on which the time spent in the neutralized sections of the course was to be recorded for each one of these sections.

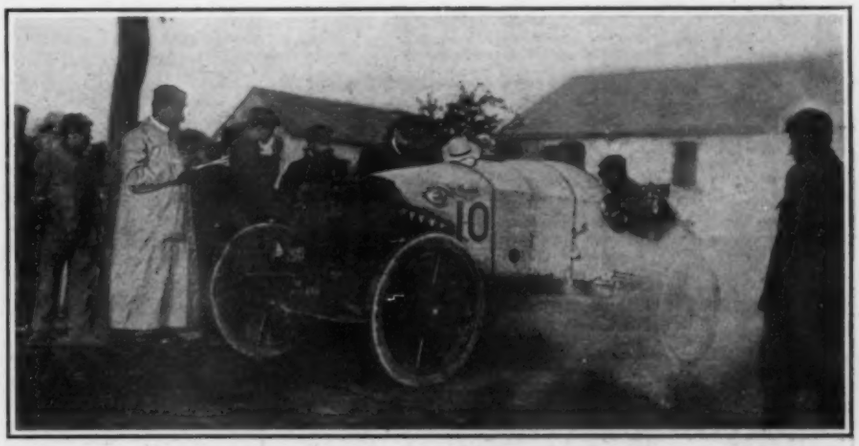
(3) A slip on which the total gross time and the total of the times on second slip were compared, thus giving the net time for the entire race.

The weather was as fine as could be wished. A slight wind prevailing slightly bothered the balloon carrying the wireless telegraphic station which, however, worked absolutely satisfactorily.

Many Mishaps but no Fatalities.

There were several mishaps of a more serious nature than the bursting of tires, and in the excitement attending the completion of the race it was not a matter of great ease to secure particulars.

Achille Fournier, on a Hotchkiss car (ball-bearings throughout), lost a wheel, which being made of insufficiently dried wood gave way. On account of the width of the road at the point no accident happened to the occupants of the car.



ROUGIER, WHO WON THIRD PLACE IN THE TURCAT-MERY, READY TO START.

A CLOSE VIEW OF THERY WHO WON FIRST PLACE IN A RICHARD-BRASIER.

Amblard, who also drove a Hotchkiss car, had a very wonderful escape. His rear axle broke while he was going about 74 miles an hour and the car swerved across the road, cutting down two small trees and overturning. Amblard and his aide were thrown out, but were not seriously injured. The axle was a hollow one and was defective. De Crawhez smashed his wheels, without personal injury, and Baras on the first time around broke a wheel also, and was obliged to go out. There were many other mishaps, principally to tires, but not so serious to the drivers.

A Very Clever Emergency Repair.

A most annoying breakdown, cleverly repaired, was that which happened to the Clement Bayard car No. 3, and was fixed by A. Clement, Jr. (the son of the famous maker), who drove the car. The fuel tank was put out of commission. The young man, who was driving his first race, unfastened it, loaded it on his back, took it a kilometer away and repaired it in a small town, all by himself, with what tools he could find there. Returning to his car he

went on, finishing his race only two hours behind the winner—passing eighth at the finishing post. This is certainly a most remarkable repair of an experienced mechanic.

The three Panhard cars were badly handicapped by lack of radiator surface, and although of a wonderful design—which we will describe in detail in a future issue—these cars, considered as the most beautiful of the entries, only came in seventh and ninth, one of them giving up, simply on account of overheating of the engines.

During the race the crossing of the neutralized sections was made as follows:

At the arrival of a racer his time was taken, and he was then piloted by a military cyclist carrying his slip and going at a rather slow gait which the car was not to exceed unless in special circumstances. If this speed was exceeded, the penalty was that a number of minutes equal to half the time of the neutralization was added to the net time of the car.

Speed over Flying Kilometer.

There was much interest shown after the race started in the times made by the different cars over the kilometer at Mazagran.

OBSERVER IN CONTROL WITH BICYCLE.

Many of the cars showed very high speeds, among the best of which are:

Gobron-Brillie (Duray), 26 2-3 sec. = 84.68 M. P. H.

Hotchkiss (Amblard), 29 4-5 sec. = 75.01 M. P. H.

Richard-Brasier (Théry), 30 sec. = 74.52 M. P. H.

Bayard-Clement (Clement), 30 4-5 sec. = 72.58 M. P. H.

De Dietrich (Baron de Forest), 32 2-5 sec. = 69.00 M. P. H.

Serpollet (Le Blon), 36 2-5 sec. = 61.41 M. P. H.

Although twenty-nine cars started, ten only finished the race. Several stopped on account of radiator trouble, which seemed to be the most common trouble, lack of cooling surface, one on account of magnet trouble, the remainder having given up at different stages of the race on account of

LIST OF STARTERS IN THE FRENCH ELIMINATION TRIALS, HELD MAY 20, ALSO CHARACTERISTICS OF THE CARS THEY DROVE, AND ORDER OF ARRIVAL AT THE FINISH.

No.	Maker.	Driver.	Wt. Kilos.	Wheel Base Meters	Tread Meters	Ignition.	Inlet Valves.	Chassis.	Cylinders.	Transmission.	High Speed Gear Driving Direct.	Actual Running Time.	Order of Arrival.
1	De Dietrich	De Forest	990	2.72	1.40	Magneto	Autom. 4 per cyl.	Armored wood	4 cyl. vertical	2 chains	No; 4 speeds	Out on 3rd round	
2	Darracq	Baras	1004	2.50	1.30	Magneto and Coil	Mech. Oper.	Pressed steel	" "	Live shaft	Yes; 4 "	Out on 1st round	
3	Clement Bayard	A. Clement, Jr.	980	2.45	1.45	Coil	" "	" "	" "	" "	" 4 "	7.11.53 4-5	Tenth
4	Hotchkiss	De Crawhez	1004	3.00	1.45	Magneto	Autom. 3 per cyl.	" "	" "	2 chains	" 4 "	Out on 3rd round	
5	G. Richard-Brasier	L. Thery	972	2.60	1.35	"	Mech. Oper.	" "	" "	2 "	" 3 "	5.20.28	First
6	Serpollet	Le Blon	991	2.80	1.40	Steamer	" "	" "	6 steam horizontal	1 chain	" 3 "	6.13.32	Fifth
7	Mors	Salleron	1000	2.60	1.45	Magneto	Automatic	" "	4 cyl. vert. thrown out of axis	2 chains	" 4 "	5.40.02	Second
8	Panhard & L.	Parman	1003	2.50	1.40	H. T. Magneto	Mech. Oper.	" "	4 cyl. vertical	Live shaft	" 4 "	6.31.00	Eighth
9	Gobron-Brillié	Rigolly	998	2.80	1.40	Coil	" "	Armored tubing	4 " " (8 pistons)	2 chains	" 4 "	Out on 1st round	
10	Turcat Mery	Rougier	950	2.72	1.40	Magneto	Autom. 4 per cyl.	Armored wood	4 " "	2 "	No; 4 "	5.45.05 2-5	Third
11	De Dietrich	Gabriel	990	2.72	1.40	"	" 4 "	" "	4 " "	2 "	" 4 "	5.48.05.4-5	Fourth
12	Darracq	Beconnais	1004	2.50	1.30	Magneto and Coil	Mech. Oper.	Pressed steel	4 " "	Live shaft	Yes; 4 "	Out on 4th round	
13	Clement, Bayard	Hanriot	1004	2.45	1.45	Magneto	" "	" "	4 " "	2 chains	" 4 "	Out on 1st round	
14	Hotchkiss	Fournier	990	3.00	1.45	"	Autom. 3 per cyl.	" "	4 " "	2 "	" 4 "	Out on 1st round	
15	G. Richard-Brasier	Caillois	971	2.60	1.35	"	Mech. Oper.	" "	4 " "	2 "	" 3 "	6.21.27 1-5	Sixth
16	Serpollet	Chanliaud	990	2.80	1.40	Steamer	" "	" "	6 steam horizontal	1 chain	" 3 "	Out on 2nd round	
17	Mors	Leger	1003	2.60	1.45	Magneto	Automatic	" "	4 cyl. vert. out of center	2 chains	" 4 "	Out on 4th round	
18	Panhard & L.	Teste	1000	2.50	1.40	H. T. Magneto	Mech. Oper.	" "	4 cyl. vertical	Live shaft	" 4 "	6.40.23 4-5	Seventh
19	Gobron-Brillié	Duray	990	3.00	1.36	Coil	" "	Armored tubing	4 " " (8 pistons)	2 chains	" 4 "	Out on 3rd round	
20	Turcat Mery	De la Touloubre	1004	2.72	1.40	Magneto	Autom. 4 per cyl.	Armored wood	4 " "	2 "	No; 4 "	Out on 4th round	
21	De Dietrich	Jarrott	984	2.72	1.40	"	" 4 "	" "	4 " "	2 "	" 4 "	Out on 6th round	
22	Darracq	Wagner	1004	2.50	1.30	Magneto and Coil	Mech. Oper.	Pressed steel	4 " "	Live shaft	Yes; 4 "	Out on 2nd round	
23	Clement Bayard	Guders	1000	2.45	1.45	Magneto	" "	" "	4 " "	2 chains	" 4 "	Out on 2nd round	
24	Hotchkiss	Amblard	1004	3.00	1.45	"	Autom. 3 per cyl.	" "	4 " "	2 "	" 4 "	Out on 4th round	
25	G. Richard-Brasier	Stead	980	2.60	1.35	"	Mech. Oper.	" "	4 " "	2 "	" 3 "	Out on 5th round	
26	Serpollet	Pelser	990	2.80	1.40	Steamer	" "	" "	6 steam horizontal	1 chain	" 3 "	7.00.27 3-5	Ninth
27	Mors	Lavergne	1000	2.60	1.45	Magneto	Automatic	" "	4 vertical out of center	2 chains	" 4 "	Out on 3rd round	
28	Panhard & L.	Tart	990	2.50	1.40	H. T. Magneto	Mech. Oper.	" "	4 vertical	Live shaft	" 4 "	Out on 2nd round	
29	Gobron-Brillié	Burton	990	3.00	1.36	Coil	" "	Armored tubing	4 vertical (8 pistons)	2 chains	" 4 "	Out on 2nd round	

being hopelessly handicapped by tire trouble or serious mishap.

THÉRY THE WINNER.

The winner was Théry, on a Georges Richard car, the same engine that won so beautifully the Monaco boat races being fitted to the car. He had lead since the second round and the machine ran steadily and without an involuntary stop from one end of the race to the other. His time was 5 hours, 20 minutes and 28 seconds, being an average speed of 99.416 kilometers or 61.7 miles an hour.

On his last round the watches computing his probable time of arrival from his previous turns fixed it at a point which eventually was less than 30 seconds different from his actual time of arrival. The regularity with which he made each round in almost the same time was truly remarkable.

SALLERON HAD TIRE TROUBLE.

The second was Salleron, on a Mors car, who would have equalled, if not beaten, Théry, had he not had tire trouble. His time was 5 hours, 40 minutes and 2 seconds, being 93.889 kilometers per hour, or 58.3 miles an hour.

ONE OF THE HUGE PANHARD RACERS PASSING THROUGH A CONTROL.

The third was Rougier, on a Turcat-Mery car—the car of which the De Dietrich is a licensee—in 5 hours, 45 minutes and 5 2-5 seconds, being 92.593 kilometers, or 57.5 miles an hour.

These three cars and drivers form the combination chosen to defend the French colors in the final race. When the condition of the course is considered, it is anticipated that much higher speeds will be attained on the Taunus course.

The success of this race has greatly pleased the French, and considering the rather unsettled condition of the foreign teams, it is believed that unless the Fiat Italian cars come to be a revelation, the cup race will be a mere match between the Mercedes and the French team. Although it is not wise to prophesy, it can be safely asserted that it will be a beautiful race between the five huge machines, and that unless Lady Luck plays tricks on the tires, it will be a close race, the outcome of which cannot possibly be predicted, the Mercedes racers being so secretly kept aside from the automobiling world.

Before closing this account of a race which many consider far more interesting than the Cup race itself, on account of the perfection of design and manufacture of every one of the cars entered and of the interests of the competing firms, one may give a few odd figures and accounts that may be of interest, while more complete particulars concerning each car will be found in the accompanying table.

AN OPEN AIR "LUNCH COUNTER" IN THE ENCLOSURE AT MAZAGRAN READY FOR CUSTOMERS

A. CLEMENT, JR., WHO MADE A REMARKABLE REPAIR IN CLEMENT-BAYARD CAR.

Notes on the Race.

It is stated that 35,000 words were sent through the telegraphic lines laid especially for the race by the military telegraphic corps.

* * *

On account of the rules of the cup, which oblige the vehicles to use only national material, the twenty-nine competitors used Michelin tires, a good piece of easy advertisement for the latter, which are the best French made tires. Each competing builder provided repairing quarters, fuel deposits and tire stocks on convenient parts of the road, the filling of the tanks and all operations on the cars being included in the racing time. The reader may guess what skilled men were employed there.

* * *

The total horsepower of the 29 cars aggregated to something around 2,950 horsepower nominal, and at least 3,200 effective, some cars, such as the Gobron-Brillié, having given at the tests as high as 134 B. H. P. The quantity of fuel, which went in gases through the carbureters of the various cars in six hours would be enough to last sometime for an Oldsmobile, and what of the tires put out of business?

* * *

The winning car had a "brake on the springs," this being an apparatus patented by a M. Truffault, the rights on which belong to the Peugeot concern. This apparatus has for its object to steady the play of the springs and keep the car from jumping excessively at the bumps of the road. Its influence was very noticeable during the race.

* * *

The De Dietrich racer came in only three minutes behind her sister car, the Turcat-Mery, which was selected for Germany, a good proof of reliability of type.

* * *

The entry fee for each car was only the slight sum of 8,000 francs, said to be meant to keep freaks out.

* * *

An amusing incident which shows that drivers are sometimes superstitious. The De Dietrich team was to have the numbers 1, 11, 21. The number 1 had been given to Gabriel, the well known driver, who won last year's Paris-Bordeaux race, but considering this number as one that cannot win he asked Jarrott, riding the same make to take it, which the latter accepted. However, after awhile Jarrott felt uneasy about it, and passed it to the Baron de Forest, who at last did not mind. Suppose he had not wanted the number? They could not even toss a penny since there were three of them.

PANHARD GOING UNDER THE MINUTE—SOLDIERS ON BANK GUARDING COURSE.

A. FOURNIER IN A HOTCHKISS CAR—HE BROKE A WHEEL IN THE RACE.

* * *

Quite a crowd kept close to the bulletin board all day at the club enclosure. This was a huge blackboard, not unlike those used for stock quotations, on which the time of departure and of each round and the speed over the flying kilometer were regularly painted by the score keepers.

* * *

It was a subject of comment that the race does not prove that road racing comes out cheap, since it is said that including all fees, repair parts, building of machines, tires, and salaries to drivers, each one of the ten firms entering cars at the rate of three each, except one which entered only two, spent between $80,000 to $100,000, and that nearly $100,000 were spent in preparations and organization by the club and organizers of the race.

GUDERS AT THE WHEEL OF CLEMENT-BAYARD, WITH BONNET REMOVED.

Suggestions to the Inexperienced.—III.

A Simple Discussion of the Principles of the Gasoline Car for the Benefit of Novices.

By A. D. RIVER.

ALTHOUGH the electrical accessories of an explosion motor are perhaps not in themselves essentially more important than the several parts of the motor itself, it is even more important for the user that he understand them thoroughly, for the reason that they are very much more liable to get out of order. Besides this, a source of trouble in the working parts of the motor is readily located even by a novice, whereas it takes experience or a fair degree of intelligence to locate a "fault" in the ignition. It has been said that out of ten involuntary stoppages of gasoline machines, nine are due to ignition troubles. Although this looks like a rather alarming proportion, it is to be remembered that troubles of this sort, unlike most others, cannot result in anything more serious than stalling of the machine, so that the proportion is after all a rather fortunate one for the beginner. The object of this and the succeeding article will be to explain the several parts of the electrical equipment so that the beginner will have no difficulty in locating and correcting ignition troubles.

Phenomenon of the Electric Spark.

The phenomenon of the electric spark is due to the fact that air and most gases are not absolute non-conductors at ordinary pressures, or even pressures of several times that of the atmosphere. If they were non-conductors, no electricity could jump through them, and there could be no spark. Although the resistance of the air is very high, it is considerably less than that of good insulating materials, such as hard rubber, porcelain, mica, glass, and the like. Consequently, if a current of high tension or voltage is given its choice of passing a certain distance through the air or through one of these insulators, it will choose the air path.

If the gap be fixed, however, even if it be very small, the tension required to jump it will be several thousand volts—far beyond the capacity of any practicable electric battery or dynamo such as an automobile could carry. As will later be explained, such a current, of very high tension but small quantity, may be produced by use of the induction coil; but it will be simpler to consider first a class of apparatus, utilizing the familiar principle of the electric gas lighter, by which a varying spark gap is made to dispense with the need of extreme potentials.

Make and Break System.

Pure, cold air has a very high electrical resistance, which becomes higher when the air is compressed and lower, up to a certain point, as the pressure is reduced below that of the atmosphere. When an electric spark traverses an air gap, the air in its thread-like path becomes intensely heated; and if the spark jumps between two metal surfaces, a minute portion—more or less according to the metals used and the volume of the current—of the metal is vaporized by the heat, and, passing from the positive to the negative spark point, reduces considerably the resistance of the gap. Advantage is taken of this fact to produce with a current of comparatively low tension a spark across a gap which the current would be much too weak to jump unaided. This is done by first bringing the metal spark points into contact, allowing the current to flow unhindered, and then suddenly separating them. At the moment when the surfaces barely touch and are about to separate, the resistance at the point of contact is very high, and the metal at this minute point becomes heated by the current sufficiently to start the vapor stream, on which the current subsequently travels as the gap is widened.

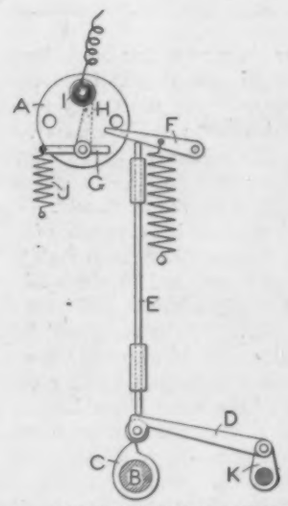


Fig. 1.—MAKE AND BREAK IGNITER.

The current used in this way, to produce what is commonly called the "contact," "touch," or "make and break" spark—as contrasted with the "jump spark," which will be explained later—is not the unassisted current of the two, three, or four battery cells employed. The latter unaided would be much too weak to produce an effective spark, and therefore recourse is had to the self-inductive properties of an electromagnet, to obtain a momentary current of greatly increased potential. When a current passing through a coil of insulated wire is suddenly broken by opening the circuit at any point, a momentary current is set up—"induced"—in the coil in the same direction as the exciting current. The intensity of this induced current depends on the number of turns in the coil and on the suddenness of the break; and it may be largely increased by inserting a "core" of soft iron through the coil. This core acts like a supplementary coil of a great many turns, and the more rapidly it demagnetizes, on the opening of the circuit, the more effective it is. For this reason it is customarily made up of a bundle of annealed iron wires, rather than in a single piece. Such a coil with such a core, properly proportioned as to size of wire and turns of winding, will give a very vivid spark with a very small battery, when the free ends of two wires are snapped across each other.

A Sparker is Necessary.

A "sparker" much more durable than a pair of wires is necessary in a hot cylinder, demanding six to ten sparks a second, and a great deal of ingenuity has been spent in devising sparkers that will not wear out too soon, lose their correct timing, or foul and refuse to conduct the current when a little too much oil gets into the cylinders. The "wipe" or rubbing contact, so popular in stationary and marine motors up to a few years ago, has had to be discarded because it wears out too fast. Steel and all of the commoner metals are burned too rapidly by the spark, resulting in pitted and corroded surfaces and imperfect electrical contact. Direct contact and separation without rubbing, and contact points of platinum, or of a hard alloy of platinum and iridium, have solved the above difficulties.

The principle on which most of the "make and break" igniters at present in use operate is shown in Fig. 1. *A* represents a plug closing an aperture in the cylinder wall; *B* is a shaft, usually the valve-actuating cam shaft, rotating once to two turns of the engine shaft; *C* is the spark cam, acting on the roller of finger *D*. *E* is a rod, moving vertically in suitable guides, and pushing against the finger *F*, which is pulled downward by a stiff spring. *G* is a light arm on a small rocking stem which passes through the plug and has a shoulder near its inner end, ground to a gas-tight fit against the plug, which prevents it from being blown out by the gas pressure inside. Beyond the shoulder this stem terminates in a finger *H* (dotted), which makes electrical contact with an insulated pin *I*, to whose outer end is attached a wire from the positive pole of the battery. A light spring *J* pulls *H* into contact with *I* whenever *F* is lifted clear of *G* by the cam, as shown in the sketch. This closes the circuit through the body of the engine, which is electrically connected to the coil and the coil to the battery. When the cam, continuing in its rotation past the position shown, "trips" finger *D*, the latter drops and *F* strikes *G* a sharp blow, breaking contact at *I* very quickly.

(Continued from page 565, issue of May 28, 1904.)

To vary the timing of the spark, *D* is pivoted on the finger *K*, which may be rocked toward or away from the cam, thus causing *D* to trip late or early, giving a spark late or early relatively to the position of the piston in the cylinder.

The "make and break" system here outlined necessitates a good many moving parts, and those in the cylinder in particular are liable to wear, stick, or become fouled. For these reasons the high-tension or "jump spark" system with fixed air gap has found great favor, in spite of the difficulties of insulating the high-tension current. To produce this current we have recourse to the same principle of induction already referred to, although the application is a little different.

Primary Current Interrupter.

If a wire forming part of a closed circuit in which a current is flowing be placed parallel to but not in contact with another wire forming part of a second closed circuit in which no current is flowing, and if the current in the first circuit be caused to fluctuate, a momentary current will be induced in the secondary circuit, which will last as long as the fluctuation in the first current continues. The more sudden or abrupt the fluctuation in the current of the first circuit the greater will be the intensity of the momentary induced current in the secondary circuit. If the above noted wire of the first circuit, instead of being straight, be wound into a helical coil, and the second wire, still insulated from it, be wound around it with a larger number of turns than the first, the intensity of the induced current will be greater than that of the first current in proportion as the number of turns in the secondary coil is greater than that in the first coil. If now a straight core composed of a bundle of soft iron wires be inserted into the helix, the combination will form an electro-magnet, and the temporary magnetism of the iron wires will reinforce the inductive force of the primary coil.

Transformation not Creation.

It should carefully be understood at this point that the process here described as transformation or induction of current does not mean that something is made out of nothing by the mere interruption of a current. The energy represented by an electrical current is the product of its potential or "voltage" and its quantity or "amperage," the potential being equivalent to pressure of water in a pipe, and the quantity to the volume of water delivered in a given time. A battery current such as used in a spark coil has a fairly large volume, for example, 2 to 5 amperes, but its potential is only 4 to 6 volts. To jump even a small air gap a potential of several thousands of volts is needed, but the volume of the current may be exceedingly small. On account of the high resistance of the very fine wire used in the secondary, the current induced is very small, and the product of the volts and amperes of the induced current is in reality never greater than that of the primary current. The electrical energy, therefore, is transformed but not multiplied.

Spark Timing Device.

It might be supposed that the momentary self-induced current in the primary coil, which still occurs when a secondary coil is added, would itself induce a higher potential in the secondary than the simple battery current. This, however, is not the

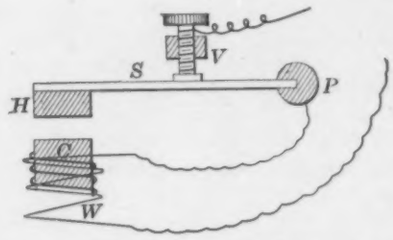


FIG. 2—PRIMARY CURRENT INTERRUPTER.

case, for the reason that the induced primary current, traversing as it does a widening gap, dies away too slowly to induce a strong current in the secondary. Consequently it is necessary to suppress this current so far as possible,—an end which is accomplished by the condenser. The condenser is nothing but a bundle of leaves of tin foil, separated each from each by sheets of waxed paper, and in electrical connection alternately with the positive and negative terminals of the make and break device. When the break occurs, the rush of induced electricity goes into the condenser, "charging" the latter like a Leyden jar, so that but a small spark is produced at the break, the potential dying away almost instantly. If the condenser is too small for the coil or battery used, or is defective, a much larger spark will appear at the break, and a weaker one, or none at all, between the spark points of the secondary.

The Jump Spark Coil.

In accordance with these principles, the commercial jump spark coil consists of a bundle of iron wires forming a core, an insulated helix of rather large copper wire next to the core, and a much longer winding of wire outside of the first, constituting the secondary coil. In order to make the secondary coil as compact as possible, the wire is very small, as will be understood from the fact that its length is sometimes more than a mile. The primary coil is connected in circuit with a battery or miniature dynamo and with a device for closing and abruptly opening the circuit (since an abrupt break constitutes the most rapid possible change in the intensity of the current); and the secondary circuit includes, besides the secondary coil, only its spark gap or "spark plug" and the necessary wiring thereto.

Interrupting the Primary Current.

We may now consider the device used for interrupting the primary current. It is frequently desirable when starting an explosion motor to have several sparks in succession, instead of only one, since the conditions as to temperature and quality of mixture are apt to be unfavorable until the motor has actually begun running, and, therefore, the first spark may fail to ignite. For this reason, the magnetic vibrator shown in Fig. 2, is quite commonly used in connection with the coil. In the sketch *C* represents the end of the core of the coil. *W* represents the primary winding, by which the core is rendered magnetic every time the circuit is closed; *P* is a fixed post in which is secured a spring *S* with a soft iron head *H* at its free end; *V* represents a platinum tipped contact screw, which touches a similar platinum contact in *S;* the spring normally makes contact, and the current passes through the primary coil to the contacts as shown and then back to the battery. When the circuit is closed by a timing device, presently to be described, *H* is magnetically attracted and the circuit broken at the contact points. *S* and *H* then return, closing the circuit again, and a continuous vibration results as long as the circuit is closed, exactly on the principle of the electric door bell, except that the oscillation of *H* is very much more rapid.

How Timing is Accomplished.

The timing device, by which these sparks are produced by closing the circuit at the proper moment, is seen in Fig. 3. Here *S* is the shaft which carries the cams for

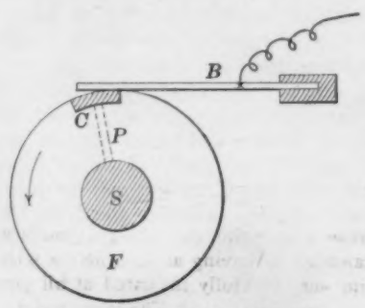


FIG. 3—SPARK TIMING DEVICE.

timing the exhaust valves. On this shaft is mounted an insulating disk of vulcanized fibre *F*, in which is inserted a metal contact section *C*, through which a screw or pin *P* is passed by which *F* is secured to the shaft and electrical connection established between *C* and *S*. *B* is a flat copper spring, or "brush," bearing on *F*, which revolves in the direction of the arrow. One terminal of the battery is connected to *B*, whose fixed end is mounted in an insulated block, and from *B* the current passes at the proper intervals through *C* and *P* to *S* as *F* revolves. The current, therefore, passes into the general metal structure of the motor, and it returns to the battery through a wire conecting the battery with any convenient part of the motor. A current caused to pass in this manner through the motor or metal work of the machine is said to be grounded. The principle is similar to that of the grounding of the return wire

of a telegraph system, whereby a single wire is made to serve the purpose of a circuit.

CONSTRUCTION OF THE TREMBLER.

A simple device combining in itself the functions of a timer and vibrator is that best known as the trembler, Fig. 4. Here *S* is the camshaft as before, and *C* is a steel

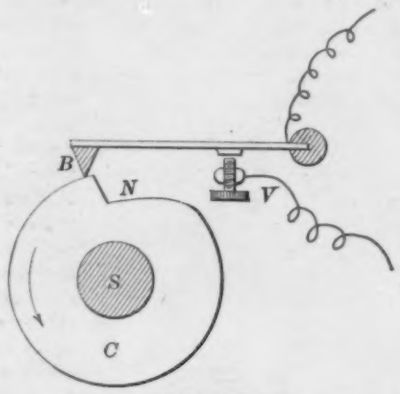


FIG. 4—THE TREMBLER.

cam with a notch *N*. The spring has at its end a hardened block *B;* the contact screw *V* is on the other side of the spring this time, and the cam keeps the spring out of contact with it except when *B* drops into the notch *N*, when it strikes the screw and vibrates against it from the inertia of the block *B*. A spark is produced each time that contact with *V* is broken, which will be from one to several times, according to the speed at which *C* is turning. It will be noticed that if the motor happens to turn backward *B* will be able to slide up that face instead of being caught by it. When the cam is turning fast *B* does not touch that face at all.

DETAILS OF THE SPARK PLUG.

We now come to the current utilizing device, which is simply a removable plug screwed into the wall of the combustion chamber and having at its center a wire or stem very carefully insulated at all points.

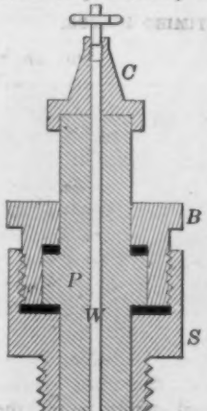


FIG. 5—SPARK PLUG.

The inner end of this stem is bent to approach within about 1-32 inch of a point or surface in metallic connection with the outer metal shell of the plug. Between these points the spark occurs. In Fig. 5, which is a lengthwise section through a typical spark plug, *S* is the steel shell, having a hexagonal exterior to receive a wrench, and threaded at its small end to screw into the combustion chamber. *W* is the central stem or wire, which is made air tight by cement or otherwise in a round tube *P*, usually made of porcelain but sometimes of mica. *P* is secured in *S* by a threaded bushing *B*. The central part of *P* is enlarged and an asbestos packing wound between it and *B*. Another asbestos packing is put under the enlarged portion, both asbestos packings being shown in solid black. A binding post *C* of any convenient form on the outer end of the porcelain completes the plug. This binding post is connected to the positive terminal, as it is called, of the secondary coil, from which terminal the induced current comes. As is evident, the secondary current is grounded in the motor after it jumps the gap, and the negative terminal of the secondary coil is, therefore, connected either to the motor or to the similarly grounded terminal of the primary coil.

(To be continued.)

Mors New Carbureter.

The 1904 Mors carbureter, which is shown in the accompanying drawings, adds another to the growing list of devices in which the diluting stream of air is automatically varied according to the intensity of suction. *A* is the mixing chamber, and

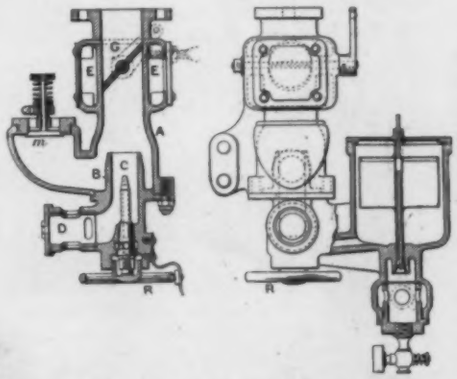


FIG. 1—MORS 1904 AUTOMATIC CARBURETER.

B the passage through which the main supply of air is drawn past the spray nozzle *C*, taking up gasoline as it goes. A shutter *D* is set to a fixed opening, whereby the degree of vacuum is regulated to suit the grade of fuel used. *E* is a jacket space through which hot water from the engine passes, to supply the heat lost by the evaporation within. The diluting air enters by valve *m*, which, as seen, may be regulated as to the stiffness of its spring by the adjustable collar on which the base of the spring bears. This valve opens more or less according to how far the intensity of the suction within is able to overcome the resistance of its spring.

The throttle valve *G* is not, as usual, connected to a governor, but is operated by a small lever on the steering wheel or by the accelerator pedal, the two working independently. Both open the valve positively, while a spring partly closes the valve when the lever or pedal is returned to "slow." In addition, the cable connecting the valve with the lever passes over a pulley mounted on the clutch pedal in such a way that when the clutch is released the tension is taken off from the valve cable, and the valve allowed to close enough to prevent racing of the engine.

The simple arrangement of the float will be noticed, also the pocket in which sediment collects below the float valve. This pocket, it will be seen, can be removed bodily for cleaning. The spray nozzle can also be removed from below by unscrewing the little hand wheel *R*.

The cylinder of the 1904 Mors engine, shown in section in Fig. 2, is interesting in several ways. It shows very well the now familiar Mors system of jacketing the cylinder with an aluminum casting which supplies the stiffness below. The cylinder liner and head are cast in one, and bolted to the jacket with strong studs to resist the effort of the explosions to force the two apart. The valves, both of which are cam-actuated, show a very rational design of head, which would seem able to resist any amount of hammering. The careful water cooling of the head, and the form of the plugs over the valves, by which they are cooled as much as possible without being actually wet, are also noticeable.

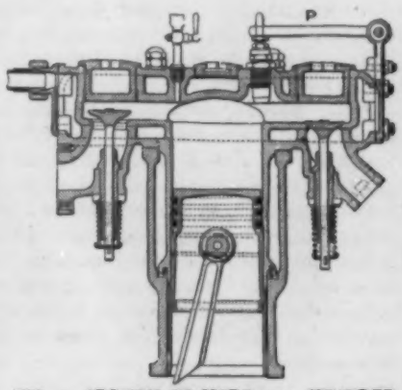


FIG. 2—SECTION OF MORS 1904 CYLINDER

The spark plugs are connected by the pivoted spring clips *P* with the insulated mounting at the right, to which the secondary wires are attached. The illustrations are from *La Vie Automobile.*

New Automobile Frame.

A recently patented frame for automobiles is made of structural T steel, with the T laid on its side and its stem inward, so that the frame members present a smooth exterior. The advantage claimed for this material is the stiffness of the corners, which may be joined by knees made of malleable iron castings or pressed steel specially formed to embrace the stem of the T and rivet both to the stem and to the vertical web above and below the stem. Thus part of the rivets are worked in shear and the rest in tension. The spring hangers at front and rear are formed of extensions from the side members or of separate forgings as preferred. The patentee is W. F. Richards, M. E., Depew, N. Y.

Preparations at the Saalburg Course.

Exact German Methods Employed in Arranging for the Gordon Bennett Race on June 17—Complete Details.

By HERR EDUARD ENGLER.

BERLIN, May 24.—But a very few days separate us now from the greatest event in the sporting life of the automobilist; from the day for which, for months past, hundreds of thousands of men have restlessly striven toward the perfection of the automobile; from the day when in peaceful contest the greatest nations of the globe, through their representatives, shall assemble at the Saalburg. This contest for the supremacy in the field of our newest industry is by no means to be compared with an ordinary automobile race inspired by the love of the sport alone; rather is this strife and the result of it of the most far reaching importance to that country whose industry and labor can successfully bring to the fore the proof that it leads the van of the international procession in this field.

Having this object in view, James Gordon Bennett, of New York, instituted in 1899, and under the auspices of the Automobile Club of France, the international prize, for which the fifth contest is about to take place. The first two races fell to France, that of 1900 to M. Charron, on a 27-horsepower Panhard, and that of 1901 to M. Giradot, on a 24-horsepower Panhard. Mr. Edge, on a Napier, carried off the prize in 1902 for England, and M. Jenatzy, driving a 60-horsepower Mercedes, made by the Daimler Works at Cannstatt, performed a like service for Germany in 1903.

Defence on Home Ground.

According to the conditions in the deed of gift the prize must always be defended in the land where it is held and thus it comes about that this year the course is laid in Germany. It was no easy matter to select a suitable course, but after much consideration and many trial runs, aided by the friendly disposition of the government, not to mention the interest which His Majesty the Emperor evinced in the affair, the course was finally laid out in the neighborhood of Saalburg. Both start and finish are at Saalburg, occurring between two huge grand stands erected on either side of the road way. The course measures 137.5 kilometers and passes through the villages and towns of Wehrheim, Usingen, Weilburg, Limburg, Idstein, Esch, Königstein, Oberursel and Homburg.*

Since, however, the stipulations require a distance of at least 550 kilometers (337 miles), this Saalburg course must be covered four times before the coveted prize is won.

Various Competing Countries.

The entries comprise seven countries: Austria, Belgium, England, France, Germany, Italy, Switzerland, each represented by three cars, making a grand total of 21 cars in the race to start 7 minutes apart.

The start is fixed for 7 o'clock in the morning, and with an interval of 7 minutes, should all of the entries start, the twenty-first will not get off until 9.27 a. m. Allowing 2¼ hours for covering the course once, the last car can, therefore, scarcely arrive at the finish before 6.27 p. m., until which time, provided no accident happen to the last starter, the victor in the contest cannot be absolutely determined.

The assemblage which will witness the race from the club enclosure will include His Majesty the Emperor, Prince Henry, his brother, the Imperial Crown Prince, the King of Wurtemberg, and many other members of the German nobility.

*A Complete description of the course with scale map was published in THE AUTOMOBILE, May 21.

Arrangements at the Grand Stands.

The two grand stands erected at Saalburg will have a seating capacity of 2,500 each and will be connected by a tunnel under the road way. Seats upon these stands will cost $12.50 each. Music will be discoursed throughout the day by three regimental bands, and those who have obtained the concession for the restaurant have been notified to provide refreshment for from 20,000 to 30,000 visitors. Moreover ten telephone stations will be installed upon the grounds which will provide constant news from the course, the various stages of the contestants and thus keep the authorities informed of any accidents or delays. This means of gathering the news of the events will be supplemented by a wireless station of the Arco-Slaby system, with two branch stations, one each in Gräfenweisbach and Neuhof. Bulletins of the progress of the race will be published regularly and at short intervals, thus keeping the interested public upon the *qui vive* until the end.

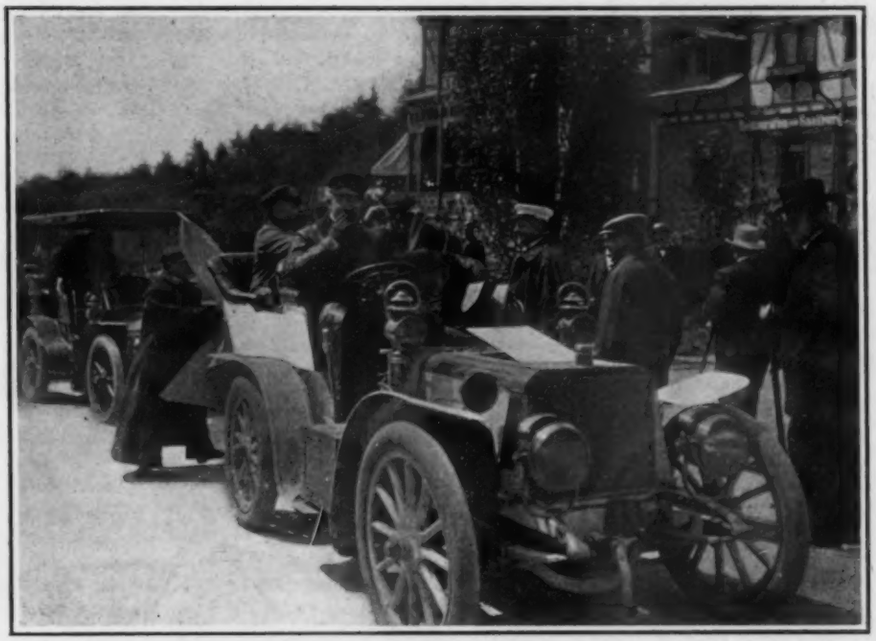
It was discovered during the last race, held in Ireland, that the interest of the public became keener from hour to hour as the race went on, and the fear, held in advance, that the spectators would become tired, proved to be without foundation.

Other Official Enclosures.

The neighborhood of Saalburg for a circuit of 10 kilometers will be fenced in and entrance to this park may be obtained at the price of $5.00. To afford an opportunity of viewing the cars as they rush headlong at their top speed down the incline, a shady path has been laid out through the grove, leading from the grand stands down the hill toward Wehrheim, this within 10 minutes from the stands, enjoying at the same time a most refreshing stroll, one may reach the lowest point of the course and be in the best position to see the cars flit by.

Two other stands will be erected in this park. One near the Saalburg restaurant,

CONSTRUCTING GRAND STANDS AT SAALBURG FOR GORDON BENNETT RACE-STANDS CONNECTED BY TUNNEL UNDER THE ROAD.



GROUP OF GERMAN OFFICIALS ON INSPECTION TOUR OF GORDON BENNETT COURSE.

1. Herr Von Budde, Minister of Public Works.
2. Herr Von Brandenstein, Sec. Auto Club, Germany.
3. Minister Von Hammerstein.
4. Governor of District of Homburg.
5. Herr Von Marx. Mayor of Homburg.
6. Herr Jacobi, Architect of Grand Stands.

from which a view may be had of the cars as they come up the hill, and the other between the start and Wehrheim at the curve in the road, protected by the shade of the trees and from which a view of the course may be had for a distance of 12 kilometers; those who love a race for the race's sake will no doubt find this the most attractive situation. The entrance fee of $5.00 permits the holders of such tickets the free use of these two stands, upon which seats are also provided.

Speed of Cars in Passing.

It is estimated that the cars will pass the grand stands at an average speed of 100 kilometers (about 62 miles) an hour, and as at such speed it would be almost impossible to distinguish one car from another a separate color has been assigned each nation. Thus the German cars will be painted white, the Austrian cars black and yellow, Italian cars black, English cars green, French cars light blue, Belgian cars yellow, and Swiss cars red and yellow.

To prevent the dust nuisance the roads through the towns, on the curves, and in the vicinity of the grand stands, will be sprinkled with Westrumite.

Points that are Neutralized.

The villages and towns of Usingen, Weilburg, Limburg, Idstein, Esch, Königstein, Oberursel and Homburg have been declared, so to say, neutral. At these places the course may be crossed by both vehicles and pedestrians, but with the exercise of the strictest circumspection. The closing of the whole course will be made as complete as possible, for which purpose a great number of employees have become necessary and an enormous amount of preparatory work been accomplished. A man will be posted at every 100 meters of distance, and from 4 a. m. all roads crossing the course except in the towns named will be closed. Such highways, however, as lead direct to Saalburg will be left free for the passage of the arriving spectators.

On June 17, the day of the race, none other than the functionaries and the racing cars shall have access to the course except in case of need, when physicians shall be permitted to pass to the required points, but even then only in the direction of the race. By the co-operation of the authorities we expect, on June 17, to show to the automobiling world that in Germany, even under the most exacting conditions, order and discipline still maintain the upper hand.

Arrangements for Reaching Stands.

On the day of the race the highway from Homburg via Oberursel to the Saalburg will be closed to all traffic, but for the convenience of those who desire to attend the race an entirely new road has been opened through the woods, leading in the direction of the race and parallel to the course. This was formerly a mere path. The road leads toward rear of the grand stands and returns by a loop so that there will be no choking of the way when the visitors arrive. The passengers will alight and proceed to the stands or the general park enclosure afoot, while the carriages will take up a position in the grove upon the Gonzenheimer Common, or return to Homburg. At this carriage stand there will be erected an electric carriage call connected with the call station at the grand stand, the distance apart being about two kilometers. Duplicate numbers will be furnished the owners and drivers of the carriages so that at any time after arrival a vehicle may be called from the carriage enclosure to the Saalburg without any delay. For this convenience a tax of $1.25 is made on each carriage.

Those who go to the course in automobiles will proceed from Homburg by another route via the Gothische Haus and the Lindenweg to Saalburg, returning via King William's Way to the Homburg parade grounds, the cars will remain in waiting, and will be called from the grand stand electrically the same as the horse-drawn vehicles.

The dust on these roads will also be laid with Westrumite, so that visitors driving to the grand stands will arrive with, at least, fairly clean garments.

Rail and Trolley Facilities.

For the benefit of those who elect to reach the racing area by rail, the Frankfurt-Homburg company will run trains on 10-minute headway. The trolley from Homburg to Saalburg will convey 600 passengers per hour and a similar number may reach Dornholzhausen with the like facilities.

In common with like events men of a speculative turn are not wanting and other than the official stands will be erected at various vantage points about the course by private parties who are already advertising the merits of their stands.

It must not be forgotten either that outside of the park enclosure will be practically a barren waste, as far as news of the progress of the race is concerned, at least, for the wires and bulletins are confined to the use of those only who patronize the official stands.

F I A T and Vingt-et-Un Race, June 20, 21.

Best Two Out of Three Wins the Challenge Cup—Manhasset Bay Course Selected—Details of Vingt-et-Un.

THE new *Vingt-et-Un* and the *F. I. A. T.* auto-boats will fight their long-anticipated marine duel for the $2,000 gold cup on June 20 and 21, and now that the date has been finally agreed upon the interest in the race is increasing apace. The victory is to perch on the—whatever it can find to perch on in a motor boat—of the craft winning the best two out of three heats of thirty miles each. The course will be laid out in Manhasset Bay, but whether it will be a triangle with ten-mile legs, or a straight run of fifteen miles out and back has not, up to the time of our going to press, been settled. It is expected that the two first races will be run on the first day, June 20, and in the event of either boat winning both races it will, of course, be unnecessary to prolong the contest.

At the Smith & Mabley shops at East Eighty-second street, New York, work on the boat is being rushed, and all will be ready in time for tuning up. The new *Vingt-et-Un* is undergoing the finishing touches, and is an exceedingly handsome boat of her kind. The length over all is 38 feet and the beam 4 feet 9 inches. In form she is very much like the conventional auto-boat, though the stern is of a new form. It goes without saying that the construction is as light as it can be without taking too many chances. The weight is only a trifle over 725 pounds, and when the 75 horsepower four-cylinder motor is installed the entire vessel will not weigh much over 2,400 pounds ready for racing, crew and all. As to the speed this "gasoline toothpick" is expected to develop the designers will not make any predictions, stating that they know no more about it than any one else, and prefer to wait and see rather than make guesses at long range.

Auto Boat "Challenger."

Another boat nearing completion in the same shop is the Smith & Mabley auto-boat *Challenger*, which is even more of an experiment than the *Vingt-et-Un*. She is very similar to the latter craft in general design, though being 40 feet long and having a beam of 5 feet 9 inches to enable her to carry the enormous power plant with which she will be equipped. The eight-cylinder gasoline engine for this racer will be of not less than 150 horsepower—probably the greatest power ever put into a boat of her size. This boat was originally designed to challenge for the Harmsworth cup, the races for which take place on the Solent on July 30; but as there are no other American challengers, both the *Challenger* and the new *Vingt-et-Un* will be sent over. Each country is permitted to enter three boats, so there is still room for another American entry, if one should materialize. The hull of the *Challenger* is not any heavier, in proportion to its dimensions, than that of the *Vingt-et-Un*. While this may seem somewhat peculiar in view of the fact that the power in the latter is only one-half that of the *Challenger*, it is explained that the big eight-cylinder motor will run so steadily that it will have less racking effect on the hull than the 75 horsepower engine, which has only four cylinders.

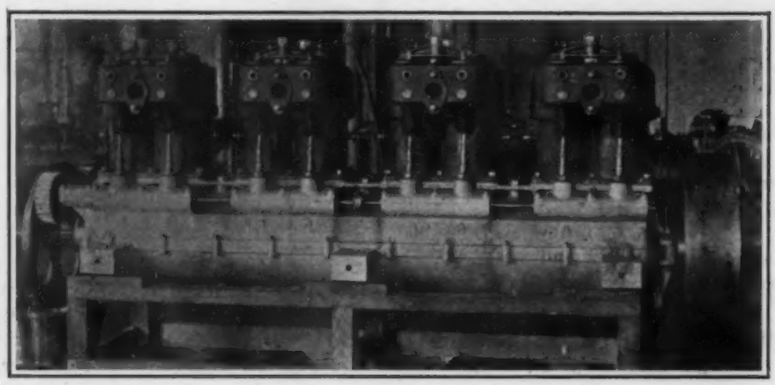
Motor for Vingt-et-Un.

The 75 horsepower motor is finished, with the exception of some minor details, and has been running on the testing blocks in the shop for adjusting purposes. It has been speeded up as high as 1,400 revolutions per minute, and the builders experience a great deal of quiet satisfaction at the manner in which it operates. Considering that the motor is mounted on a framework of light wood erected on a springy floor, the vibration is slight, and it is expected that when placed in the boat it will be an unusually steady engine.

In design this motor is avowedly patterned after the famous Mercedes model, the builders believing it better policy to make an honest copy of the best motor they know of than to waste time in experimenting with original forms whose efficiency would be more or less problematical. For this reason the Mercedes model is closely followed in its main features, though there are many details incorporated in the new engine which it is believed will increase its efficiency for marine service. One of the difficulties experienced by those who instal in launches motors built expressly for automobiles is that the lubrication of the forward cylinders is frequently inadequate. An automobile motor is intended to set with its crank shaft horizontal the greater part of the time, and the splash lubrication is arranged accordingly. The marine motor, on the other hand, is bolted to its bed at a considerable angle from the horizontal and consequently the lubricating oil can do nothing but run down to the lower, or after, end of the crank case. If there is sufficient oil put in the case of a four-cylinder motor to lubricate the forward cylinders the after ones will be hopelessly flooded; while if the proper lubrication of the after cylinders is maintained, the forward ones will run dry in a very short time. This is not a hypothetical case, but a real practical difficulty that has frequently been experienced, and which Smith & Mabley believe they have completely overcome in the new motor. The lubricating oil is circulated by means of a small pump, and every bearing is fed by an oil tube with sight-glass. The aluminum crank case is cast with partitions between the cranks of such a height that the oil will overflow into the next lower compartment before it reaches too great a depth. Into the lowest compartment is tapped the suction of the oil circulating pump.

Forced Feed Lubrication.

The main pipe leading from the oil pump is branched, and the two branches feed, one the main shaft and cam shaft bearings, and the other the cylinders. For the latter purpose a small hole is drilled into the side of each cylinder, in such a position that it is always covered by the piston, and through this the oil is led. Three oil grooves are turned in each piston, and these take up what oil they require at each stroke. The piston pin is hollow, and carries oil to the bearing in the upper end of the connecting rod, the bearing being grooved for the distribution of the lubricant. The lower end of the connecting rod has a hole drilled in its under side, into which a bent tube is screwed. This tube opens in the direction in which the engine rotates, so that at each revolution it dips, open end first, into the oil, forcibly scooping it into the bearing through suitable ducts. It will be seen that no part of the lubrication is left to chance. The position of the motor on the testing is, of course, exactly the same as its position will be in the boat, and the trials have demonstrated the efficiency of this oiling system.



EIGHT CYLINDER 150 H.P. MOTOR FOR SMITH & MABLEY HARMSWORTH CUP CHALLENGER.

Owing to the large size and high speed of the motor it was considered unsafe to make use of cast iron in the construction of the fly-wheel. At 900 revolutions per minute it would attain a peripheral velocity of about a mile a minute, and as the motor will be without governor and subject to frequent and sudden accelerations of speed, the bursting strain will be enormous. Therefore the fly-wheel in the Smith & Mabley Simplex marine motor is a steel casting, which possesses ample strength under all conditions and leaves a wide margin of safety. The wheel is 24 inches in diameter and weighs 215 pounds.

The cylinders, four in number, are cast in pairs, the heads being cast integral. The bore and stroke are 6 1-2 and 6 3-4 respectively (about an eighth of an inch larger each way than the cylinders of the 90 horsepower Mercedes motor) and the normal speed will be about 850 or 900 revolutions per minute.

The valves are all mechanically operated and of liberal size, all the inlet valves being on the starboard, or right hand side looking toward the bow, and the exhaust valves on the port, or left side. Each valve occupies a separate chamber and may be removed through an opening directly over it, closed by a cover held down by the well-known yoke arrangement, each yoke serving to hold down two covers and being itself secured by a single bolt in the centre. The arrangement of the exhaust valves is exactly similar to that of the inlet valves. An ingenious device, on the dash-pot principle, prevents excessive hammering of the valves at high speeds, but the retarding effect is not sufficient to interfere in any way with their prompt seating. The push rods can be adjusted to compensate for the stretching of the valve stems by a screwed section held by a jam nut.

Location of Cam Shaft.

The cam shafts, one on each side directly under the valves, run the whole length of the crank case, and have unusually long bearings. There will apparently be no trouble from broken or stripped gears, as these are of exceedingly liberal size, of cut steel, with an intermediate gear of fibre and bronze, through which motion is transmitted from the crank shaft gear to the cam shaft gears. A notable feature of the valve gearing is that all parts throughout have been made large and substantial, the reduction of weight at the expense of strength or durability not having been attempted in any instance. In fact, the whole motor has been constructed with a view to enabling it to stand continuous hard work, the builders having in view the possibility of long-distance races and wishing to be free from doubt as to whether their motor will stand up for more than a short spurt at top speed.

Jump Spark Ignition Used.

The jump spark ignition system is well worked out, and embodies some novel features, notably in the commutating arrangements. The commutator cannot be found in the usual place but is placed on the crank case, half way between the ends, on the inlet side and directly over the centre of the inlet valve cam shaft, from which it is driven by bevel gears. It is placed horizontally, and is in plain view, and at the same time out of the way of danger from accidental knocks. A single Splitdorf coil is used for all four cylinders, the source of current supply being a storage battery. Both primary and secondary currents are commutated. The wiring is carried in hard rubber tubes and all sharp bends are avoided.

But one carbureter is used, this being of the Mercedes type, slightly modified in detail. All adjustments are made manually, as this method yields the best results in expert hands. The main air supply is taken from a casing surrounding the exhaust pipe, and in addition there is an auxiliary air inlet which opens directly into the atmosphere.

A 150 Horsepower Boat Motor.

The 150 horsepower motor, whch is still in an unfinished state, is in many respects exactly like the 75 horsepower. The cylinders are precisely the same, but eight are used instead of four. The valve gearing, lubricating arrangements and electrical equipment are the same as in the smaller motor, except that there will probably be two carbureters and two coils instead of one of each. A remarkable feature, however, is the aluminum crank case, cast by Williams. This case, which is divided into halves horizontally, is 6 feet 8 inches long, each half being in one piece of that length. The castings are as perfect and flawless as if they were small pieces, and under tests the metal has shown remarkable strength. In this connection it may be interesting to note that the Smith & Mabley shop makes use of a method of soldering aluminum which is said to be highly successful.

The fly-wheel of the big motor is the same in every respect as that used on the smaller motor; but it is possible that, owing to the number of impulses per revolution, a smaller and lighter one may be used. This, however, is a matter that will be determined by experiment. As it will manifestly be imposible to crank this long string of cylinders, a new compressed air device for starting will be employed which will necessitate the use of only a small pump and tank, but will not add materially to the weight of the outfit. This motor is to have about the same speed as the smaller one, and should run with practically no vibration.

Design of the Motors.

It will be noticed from the illustration that while these motors are compact and neat in design, there is a large amount of space between the cylinders and the various parts are easy of access—a matter of no small importance in a racing machine. The wide spaces between the cylinders permit the bearings in the crank cases to be of great length. All bearings, in fact, are very long, in accordance with the builders' desire to make a long-distance motor.

Henley's Richmond Garage.

M. C. Henley & Son have now occupied their recently completed garage, "Auto Inn," at 1207-1211 East Main street, Richmond, Ind. The building, which is shown

WELL DESIGNED INDIANA GARAGE.

in the accompanying illustration, has been fitted up as a thoroughly up-to-date repair and storage station, with a capacity for the accommodation of seventy-five machines. Richmond having been selected as one of the night stops for the tourists of the A. A. A. St. Louis tour, the location of this garage is especially convenient for those who take part. East Main street is a continuation of the famous National road, which is a part of the route selected for the tour. Mr. Henley has been appointed a member of the division committee in charge of the tour in and about Richmond. The Arlington and Wescott hotels are also located there.

The efforts of the drivers of fast horses at Council Bluffs, Ia., to secure by city ordinance the exclusive use of a speedway on Fourth avenue has resulted in action being taken by automobilists to have Second avenue dedicated to their use, and, with other exclusions, they would also impose that horses, cows, sheep, wheelbarrows, baby carriages, velocipedes, hand organs, bicycles, slot machines and street sprinklers be kept from the avenue, the penalty for violation of the proposed ordinance to be a fine of $5,000 or ten years in the penitentiary.

One hundred automobiles have been registered with the Prothonotary at Allentown, Pa.

Long Island Automobile Speedway.

Ten-Mile Straightway Track to Be Built on A. T. Stewart Property on Hempstead Plains.—Horses Barred Out.

BEFORE another season comes New York automobilists will probably be in the enjoyment of the first automobile speedway to be constructed in this country, if not in the world, where they may drive their machines without fear of danger to other vehicles and without interference from other forms of traffic, and where, also, it is possible that speed trials, braking contests, and the like, may be held under more favorable conditions than heretofore have been possible in this country. The speedway will be located upon the Hempstead Plains, Long Island, and will be the central feature of a grand boulevard which ultimately will extend the entire length of the immense property of the A. T. Stewart estate, from Floral Park to Hicksville, a distance of ten or twelve miles.

BOULEVARD WILL BE 200 FEET WIDE.

This boulevard will be 200 feet wide and the automobile roadway, forty feet in width, will occupy the central portion. Flanking the central roadway on either side will be a parking strip, thirty feet in width, which will be planted with trees and shrubbery, and beyond these will be the roadway for equestrians and carriages, each fifty feet wide. The surface of the inner thirty feet of each roadway will be prepared as bridle paths. On account of the flat nature of the ground generally, the boulevard will be practically level throughout its entire extent and it will be perfectly straight the greater part of its length.

BREAK NECESSARY AT GARDEN CITY.

At Garden City a break of about 3,000 feet in the continuity of the boulevard will occur in passing through the park which surrounds the Garden City Hotel, but this will be the only break in the entire length. Stewart avenue, which passes in front of the hotel, will be the line upon which the boulevard will be located, and except where it passes through the park at Garden City, this street will be widened to the full width of 200 feet and extended through the length of the property.

CROSS ROADS WILL BE AVOIDED.

Cross roads will be avoided as far as possible throughout the entire extent of the boulevard. An important cross road between Floral Park and Mineola, upon which a trolley line is likely to be operated in the near future, will be carried under the boulevard. The Mineola Road, which also has a trolley line upon it, will cross at grade near the Garden City Hotel, but as this is where the break in the boulevard occurs, the grade crossing will not make any difference. Another road will cross near Westbury, but from that point there will be practically no crossings. The roads and avenues which will be laid out in the course of the improvement of the property will avoid crossing the boulevard as far as possible, though the principal ones will connect with it.

IMMENSE TRACT PRIVATELY OWNED.

The entire tract through which the boulevard will run is about ten miles long, three miles wide at its greatest width and comprises about 8,000 acres or ten times the extent of Central Park. The westerly part of the tract, from Floral Park to a point beyond Mineola, is owned by the Garden City Company, which is controlled by the A. T. Stewart estate. Plans for the improvement of this tract have already been made by Charles W. Leavitt, Jr., of New York City, and the contracts let. Actual work upon this section will be begun in August and it is expected that the first four miles of the boulevard and speedway will be ready for use next season.

Although the boulevard will be located upon private property it will be open to public use at all times. As long as it remains a private road, the State automobile law regarding speed, etc., will not apply, and its use will be subject only to such restrictions as may be imposed by the owners of the property. This will make it possible to hold speed trials and other contests upon it if desired under exceptionally favorable circumstances. Even if the boulevard was turned over to the county, it would still be possible for the local authorities to authorize speeding upon the automobile track at any time.

GARDEN CITY A FAVORITE RESORT.

Garden City is already a favorite resort for automobilists, and it is planned by this improvement to not only attract motorists in greater numbers but to induce them to buy land and to establish homes upon the property. "We are looking for people who will buy plots of from one to five acres or more, and build handsome homes on them," said George E. Hubbell, manager of the Garden City Company, "and we will offer them every possible inducement. If they are automobilists and want high speed, they can have it."

An Auto House for $150.

An automobile house that cost only $150 has just been completed for J. S. Spargo, former managing editor of the Minneapolis *Times*, now general manager of the Public Service Club of Minneapolis. The house was erected at the rear of the owner's residence, at 3044 Emerson avenue, South, and is shown in the engraving herewith.

The house is 12 by 16 feet in size and 14 feet high and is entirely of wood. It was built to house only one small car, and the construction is as economical as was compatible with good appearance, durability and convenience.

The floor is of ordinary matched flooring, but could have been cemented at an extra

J. S. SPARGO'S AUTOMOBILE HOUSE.

cost of $12. But with a cement floor, it would also be advisable for the sake of greater convenience to have water connection in the place with arrangements for washing the car in the house.

The following lumber bill will give an excellent idea of the material that enters into the building:

Novelty siding, 364 feet.

20 pieces, 1x6 inches, 16 feet long, dressed and matched flooring, No. 1.

40 pieces, 2x4 inches, 16 feet long, s2s studding rafters.

2 pieces, 4x6 inches, 16 feet, s2s studding rafters.

2 pieces, 4x6 inches, 12 feet, s2s studding rafters.

8 pieces, 2x6 inches, 12 feet, s2s studding rafters.

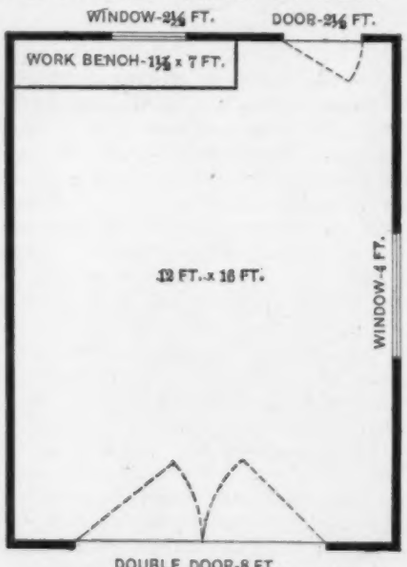
300-foot boards, 12 feet, No. 2 s2s.

2,500 cedar shingles.

Two doors (each) 3 feet, 6x7x6x1 3-4.

One door, 2 feet, 6x6x6x1 3-8.

The house was built for Mr. Spargo by J. A. Turnbull, a local builder, who expects to do considerable business in this line.



HORIZONTAL SECTION OF HOUSE.

In cities where lumber is higher in price than in Minneapolis the cost of a similar house would be proportionately greater.

On the Road to St. Louis.—III.

Road Hog Met Between Batavia and Buffalo.—Trouble Brewing in Bison City Over New State Law.

Special Correspondence.

BUFFALO, June 4.—In the early days of cycling, there appeared on the scene an individual, whose selfish propensities soon earned for him the name "Road Hog." As cycling became a general means of locomotion and this individual himself acquired the art of balancing the metal steed, he disappeared and of late years has been seldom, if ever, encountered. But with the introduction of the automobile he has returned and probably for years will make himself generally disagreeable to tourists.

We made his acquaintance one day last week, while running between Batavia and Buffalo. Ascending a steep grade on high speed, especially when touring in a car with only eight or nine horsepower is a difficult feat, especially when the road is so crowned that unless one pair of wheels is kept in the center of the road a machine is liable to tip completely over. This was our situation when we discovered a driver in a light wagon with one horse attached ascending the hill ahead of us, the horse walking slowly. Our horn was sounded and the driver looked around but made no attempt to turn out. Just as we had begun to slow down a few feet behind the wagon, the driver pulled back his horse and we struck the rear of his wagon.

The driver jumped from his wagon, rushed around behind our car, took down our number—though neither his wagon nor our car had received the slightest damage from the uphill collision—and showered such abuse upon us and automobilists in general as one seldom hears, even in counties traversed by the canal. We asked him to pull aside and allow us to pass, but not he. Finally, after a delay of fifteen minutes, during all of which time he was threatening us with everything from murder down, one of our party jumped out of the tonneau, grasped his horse by the bridle and led the animal and vehicle to one side of the road, despite a fierce resistance from the driver, and we proceeded on the way toward Buffalo, at which place we arrived without further incident.

In Buffalo we learned that the new State law would go into effect the following day and the dealers and private owners were hastening to comply with its provisions. Among other things, each machine must have a license properly sealed and a red seal which must be affixed to the vehicle and shown upon request. The license number must be painted on the glass of the lamps if night running was indulged in and every car must be provided with a number, or if it is the property of a dealer, it must carry the name of the car and name of the dealer on a large sign suspended from the rear axle. The bicycle police had been instructed to enforce the law to the letter, and automobilists in the Queen City who have been practically let alone for the past two years are persecuted once more.

In Rochester we found that the Mayor, Hon. James G. Cutler, himself an automobilist, had ignored the clause in the State law that admits of ten miles an hour within the city limits and instructed the police to arrest any autoists whom they think are driving too fast. While going around a corner with our speedmeter registering six miles an hour we were halted by a policeman and informed that if we went around another corner as fast as that we would never get any nearer St. Louis than Rochester. Several motorists have been arrested in Rochester and discharged in police court the next morning.

J. J. Mandery, of Rochester, was making elaborate plans for the St. Louis run, as he is a member of the committee appointed to look after tour matters in his city. His large garage on South avenue will accommodate at least 100 machines, and every facility is provided for making immediate repairs, no matter how serious. Mr. Mandery has one of the largest and best equipped garages between New York City and Chicago. He handles Wintons, Elmores, Olds, Bakers, Peerless, Locomobiles, Columbias and the White steamer.

At Batavia, where the tourists are scheduled to take luncheon on Saturday, July 30, the Hotel Richmond will accommodate several hundred. Both table and wine cellar are well kept up. The Genesee Hotel and several restaurants will care for the overflow. There are also good hotels at Caledonia and Le Roy, a few miles east of Batavia.

Our first real trouble since leaving New York occurred last Saturday. While running along at about twenty miles an hour our chain, which had been allowed to become too loose, jumped the sprocket and tangling up in the wheel brought us to an abrupt stop. Everything had to come out of the car and then we had to tear up the floor of the tonneau. We were equipped with an extra chain which was put on in preference to attempting repairs on the road. It took nearly an hour to pick out the pieces of the old chain and apply the new one. Luckily nothing was broken, and we were soon bowling along at a good rate again.

The car attracted cosiderable attention in Buffalo, and a crowd soon collected wherever we stopped. The onlookers differed greatly from the crowds of curious that flocked around us in the smaller towns, for here almost every one who stopped to examine the little 8 1-2-horsepower car, which had successfully carried 800 pounds of passengers and baggage through the Catskill Mountains during a week of frequent rain, was an automobile enthusiast, and many of them were two-cycle motor advocates. Our equipment received a careful examination, nearly every one showing great interest in the coming New York—St. Louis run, especially some of our questioners who have already sent in their entries for the big tour.

REPLACING A BROKEN CHAIN—THE FIRST BREAK DOWN SINCE LEAVING NEW YORK.

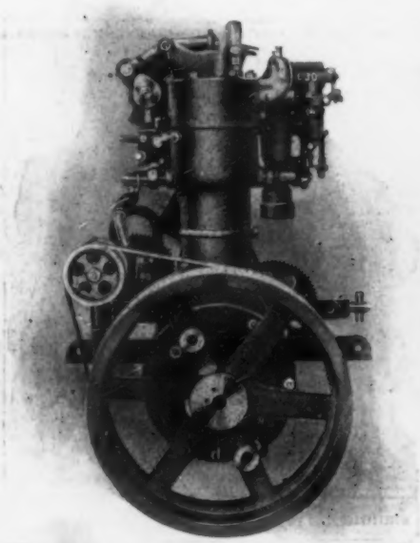
Just before entering the city limits of Buffalo we encountered the first road toll gate on our 478-mile run where toll was charged automobile. The toll, however, was only five cents, and considering the excellent condition of the road it was paid with pleasure. The Buffalo Automobile Club is making elaborate plans for entertaining the tourists in that city on the night of July 30, when the New York and Boston contingencies meet in Buffalo to run on to St. Louis together.

Matheson Gasoline Touring Car.

THE Matheson 24 horsepower touring car attracted a good deal of notice at the Madison Square Garden show last January, partly by its excellent workmanship and partly by certain unusual features in its design. These features are found partly in the engine and partly in the transmission gear, the whole car in fact giving evidence of an unusual degree of independence on the part of its designer, Chas. R. Greuter.

Frame of Armored Wood.

The frame is of armored wood, strips of second-growth ash being riveted to the outer sides of spring steel flitch plates tapering at both ends. These wood strips are further stiffened by strips of steel on top and bottom, giving a frame stiff and yet elastic and not liable to buckle. A long angle steel false frame, supported by spring steel hangers, carries the motor and change gear box. Three-quarter elliptic front and full elliptic rear springs are used.

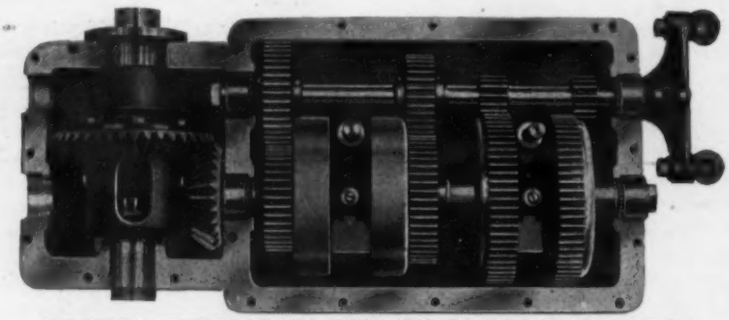


MATHESON FOUR-CYLINDER ENGINE.

The motor has four separately cast cylinders of 4 1-2 inch bore by 6 inch stroke, and is rated at 24 horsepower at 800 turns. The cylinder heads are separately cast, and, as the valves are all in the heads, the cylinders have no bosses or valve chambers to cause unequal expansion and deviation from a truly circular bore when hot. The pistons are claimed to be cast of such a mixture that their expansion is equal to that of the cylinders, so that they can be accurately fitted when cold. The valves are worked by cams cut integral with the cam shaft, which runs in brackets bolted on one side of the cylinder heads. A slanting shaft at the front of the engine, and two pairs of bevel gears, communicate motion to the cam shaft. On the cam shaft side are make and break igniters, taking current from a magneto alternator gear-driven from the engine. Jump spark ignition may be substituted for the other or added to it.

Location of the Governor.

The governor is mounted on the fan shaft at the front of the engine, and therefore runs at high speed, making it very sensitive. It acts on a throttle valve through which the mixture passes before entering the distributing pipe seen near the top of the engine in the view of the right side. The carbureter is supplied by a pump with return overflow from the gasoline tank at the extreme rear, and is said to be perfectly automatic. A special feature of the engine is the "self-starter," which is made possible by the unusual accuracy of fit of the pistons and rings. The self-starter is an electric switch combined with a dial indicator which shows at all times which cylinder is to take the next explosion. It is claimed that the engine may always be started by the throw of this switch after standing over night.



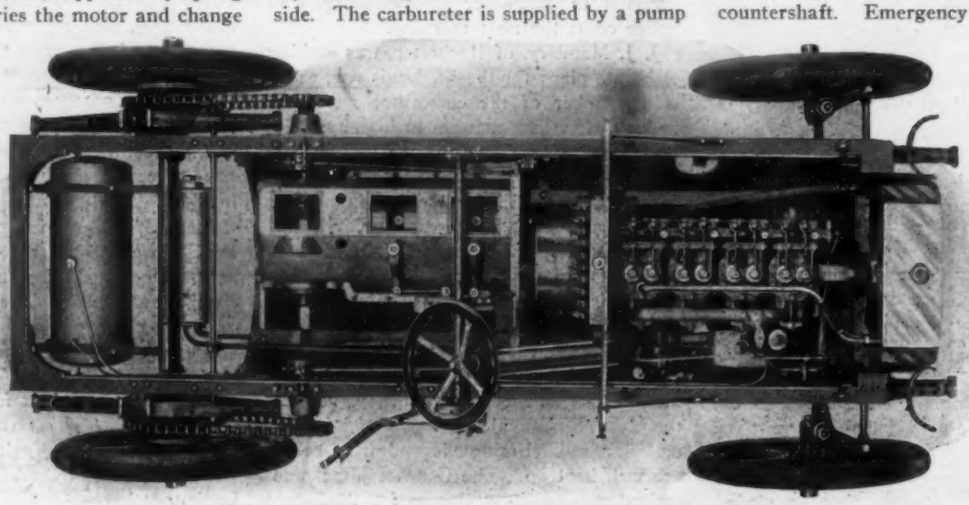
INDIVIDUAL CLUTCH CHANGE-SPEED GEARING WITH SPRING CUSHION.

Speed Changing Gears.

The speed-changing gears work on the individual clutch system and are constantly in mesh. From the engine to the first gear shaft the drive is through spring cushions, thereby relieving the transmission of road shocks. The clutches are claimed to be very efficient and very simple to adjust. A pair of bevel gears drive the cross countershaft, which has flexible connections between the gear box and the outboard ends, which latter run in substantial bearings attached to the main frame. Sprocket chains complete the drive. Roller bearings are used throughout in the gear box, and also in the wheel hubs.

The Braking System.

The braking system includes two brake drums, one on each of the outboard countershafts, instead of the usual single drum attached to the differential shell and working through the flexible couplings of the countershaft. Emergency brakes are ap-



TOP VIEW OF CHASSIS OF MATHESON 24-HORSEPOWER 1904 TOURING CAR.

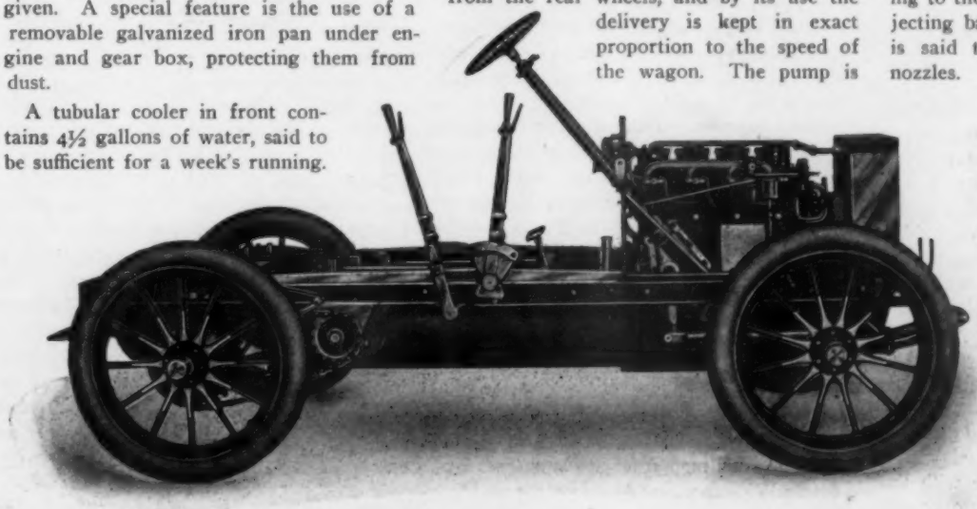
plied in the shape of expanding rings in the sprocket drums on the rear wheels. The former are applied by pedal, and the latter by a side lever which applies the regular brakes at the same time. Either set of brakes, it is said, will lock the wheels. A single lever operates all the gear changes —three forward and one reverse—and this lever is of course shifted to disconnect whichever clutch happens to be engaged, before the brakes are applied.

The steering gear has a right and left hand screw cut on the steering wheel shaft. It is said to be absolutely irreversible, and very easily worked. The steering knuckles and connections are very substantial.

LARGE WHEELS ARE USED.

Large wheels are used, 36 inches in diameter, with 4-inch front and 4 1-2-inch rear tires. A liberal road clearance is thus given. A special feature is the use of a removable galvanized iron pan under engine and gear box, protecting them from dust.

A tubular cooler in front contains 4½ gallons of water, said to be sufficient for a week's running.



SIDE VIEW OF MATHESON CHASSIS.

The gasoline tank holds 15 gallons, and may be filled without disturbing passengers in the tonneau.

The body is of aluminum or whitewood, and will carry seven persons. Special attention is paid to upholstery.

The rated speeds are eight, twenty, and forty miles per hour on good roads, and the weight is 2,700 pounds.

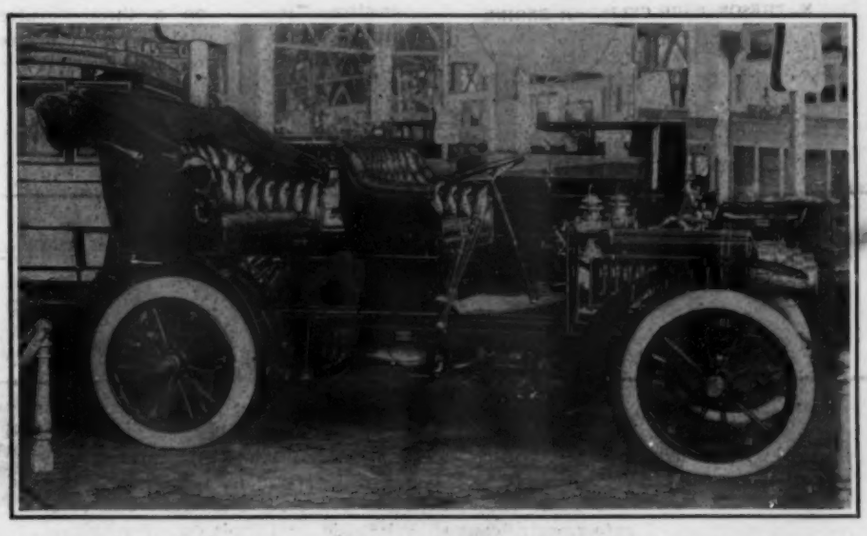
Auto Watering Cart.

An innovation for which America has waited singularly long is shown in its French form in the accompanying photograph of an automobile street sprinkler just put in service on the Avenue du Bois and the Place d'Etoile, Paris. It is driven by a 35-horsepower De Dion steam engine, and has a capacity of 5,000 litres—264 gallons—said to be enough to water one-half the length of the Avenue du Bois. It takes six minutes to fill the tank, and the wagon has a speed of 5 miles average and 9 miles maximum, so that it can keep up with the other heavy vehicles in the street.

A special feature is the use of a pump to spray the water. The pump is driven from the rear wheels, and by its use the delivery is kept in exact proportion to the speed of the wagon. The pump is probably centrifugal, since the spraying nozzles are said to be adjustable according to the weather by the hand wheels projecting back of them. The width sprayed is said to be 25 feet for the combined nozzles.

FRENCH AUTOMOBILE WATERING CART JUST PUT IN SERVICE ON PARISIAN BOULEVARDS.

THE Dominion of Canada exhibition, otherwise known as the Winnipeg fair, will be opened on July 24 and continue till August 6 next. The Dominion government has granted the sum of $50,000 to assist in making the fair a success. All applications or requests for information must be directed to Exhibition Department of the Canadian Manufacturers' Association, Toronto, Ontario. Foreign exhibits are invited and foreign exhibitors will be accorded the same benefits, power for processes of manufacturing, exhibiting, etc., as are granted to Canadian manufacturers.



Foreign exhibits in the automobile section at the World's Fair at St. Louis are gradually increasing in number. One of the latest and most interesting is shown in the accompanying photograph of a Mors side-entrance surrey. This machine is a fine example of the body builder's art, in addition to its merits as a product of a high-grade workshop.

Correspondence

Street Dangers in New York.

Editor THE AUTOMOBILE:

Sir:—In the interests of "law and order" I respectfully enclose copy of a letter I mailed to-day to Police Commissioner McAdoo, and, which, if published in your columns would no doubt encourage other automobilists to make a strenuous protest against a very dangerous practice of throwing hats and caps under automobiles on the streets of New York; you will favor the cause by inserting same in your valuable paper. J. STUART BLACKTON.

New York City.

COPY.

NEW YORK, June 7, 1904.

Commissioner McAdoo,
Police Headquarters,
New York City.

Dear Sir: The writer begs your earnest attention to the contents of this letter on behalf of the automobile owners in New York City, and especially in the Bronx. While I have been bombarded with sticks, stones, lead pipe and decayed vegetables, my particular complaint in this instance is in regard to the throwing of caps which the boys indulge in and which (while it seems a very harmless pastime) is in reality exceedingly dangerous, as my experience of last Friday night proves. While riding through Union avenue near 167th street, with my wife and two small children one of a crowd of boys and girls threw a small cloth hat under the wheels of my machine with the laudable intention of having it run over and causing the hard-working parents the expense of buying a new hat. Instead, however, of landing under the wheels the cap lodged on one of the side driving chains and was drawn up over the sprocket, threw the chain off the sprocket, bent the countershaft and, all the strain being suddenly put on the other driving chain on the opposite side of the car, the vehicle swerved into the sidewalk, and had I not been going considerably "under the law" it would have resulted in another serious, and possibly fatal accident. Those not familiar with automobiles and their construction are inclined to call us auto drivers "cranks" when we object to such childish amusement as this throwing of caps; but I would call to your attention that a car of the same make as mine was overturned and completely wrecked, and out of the four occupants three were seriously injured, very recently while on a run from New York to Boston by the mere "harmless" throwing of a boy's cap. This practice flourishes in every street in New York where children are to be found, and I have repeatedly seen it occur directly under the eyes of an officer who no doubt thought, like lots of other people, that there was no harm or danger in it.

I would suggest in the interests of safety to all automobilists and for the protection of my wife and my children that you send out an order to every precinct in the city instructing the men on post to suppress this hat throwing just as sternly as they suppress the stone throwing, as my experience proves that it is equally dangerous.

Officer Fraser, of the Morrisania Bicycle Squad, arrived on the scene of my Friday night's accident a few minutes after the occurrence and gave me every aid in his power to discover the cap thrower, but was unsuccessful.

As Secretary of the Bronx Automobile Club I would say that the club members are at all times ready and willing to cooperate with the Police Department in rounding up some of these Bronx rowdies, and make an example of them.

I would further suggest that if the penalty for this missile throwing took the form of a heavy fine the parents would not view with such complacency the nightly amusement of their offspring.

Thanking you for the manner in which you are at present aiding automobilists, and trusting that you will give this matter your immediate attention, I have the honor to remain, Yours very truly,

(Signed) J. STUART BLACKTON.

St. Louis Run Maps and Licenses.

Editor THE AUTOMOBILE:

Sir:—I would like to ask if you can give me the information necessary to obtaining a license for an automobile trip to St. Louis in July, and also where I can obtain a reliable road map from Milwaukee to St. Louis. We expect to go about the middle of July and we don't want to be detained on the road over the license matter if it can be avoided. A. I. S.

Wauwatosa, Wis.

As matters stand at present no licenses will be required until St. Louis is reached. A St. Louis license giving the freedom of the city can be obtained from License Collector P. J. Clifford, City Hall, St. Louis, upon making a deposit of $5.50, of which amount $5 will be returned to the owner when he leaves the city with his machine, the 50 cents being retained to pay for the license plate that is issued to him but which must be returned to the city upon departure. If any touring is to be done in Missouri outside of St. Louis a license fee of $2 must be paid in each county entered.

The Chicago licensing and numbering ordinance is not being enforced now but the authorities are at work upon a new automobile ordinance which may be passed before July. It is thought, however, that this will not require the licensing of cars. There is no State licensing law in either Wisconsin or Illinois.

The Chicago Automobile Club is able to supply some new road maps just published, or to be out soon, showing the best roads in Illinois and southern Wisconsin. Frank X. Mudd, of the Chicago Automobile Club, who is a member of the St. Louis tour committee, can give you all available information regarding routes and hotel and garage accommodations between Milwaukee and the World's Fair city.

How to Become a Salesman.

Editor THE AUTOMOBILE:

Sir:—Would you advise me to learn automobile repairing and the care of automobiles and their mechanical equipment, etc., with the idea of connecting myself with some manufacturer or garage as salesman or demonstrator, or something of the kind?

Do you think this would be a profitable business, and if so, what would be the best way to get into it? Where could I fit myself, and how long would it take me?.

C. M. E.

The personal equation cuts such a large figure in matters of this kind that it is impossible to answer any of your questions definitely. In order to become a salesman and demonstrator of automobiles it would of course be absolutely necessary that you should become familiar with the details of construction and method of operation of the particular car you expect to handle. Moreover, you should know what to do in case something goes wrong on the road. A salesman who is unable to make minor repairs while on the road, perhaps with a prospective customer, will hardly stand much chance of business success, and in order to do such work practical experience is necessary. The best way to obtain this is to connect yourself, as you suggest, with some automobile manufacturer, preferably the manufacturer of the car you intend selling, and absorb all the experience and knowledge you can concerning that particular car.

While it is true that any man of average intelligence can learn to care for an automobile, success will depend largely upon aptitude for mechanical matters combined with ability to make others see the good points of your car as you yourself see them. In other words, mechanical knowledge and practical experience must be supplemented by the peculiar qualities which go to make the successful salesman, whether he be selling automobiles or patent can-openers. The manner in which you gain this experience will depend upon your own efforts. As to your qualifications as a salesman, you probably know better than any one else. The question whether this would be a profitable business or not hinges upon exactly the same points as in any other line. You will find yourself in keen competition with men who, as a rule, are well up in their business, and other things being equal, your success will depend upon your superior ability. A good salesman with a good car can make a fair amount of money as salesman; but if he proves well above the average there is generally room for him higher up.

We cannot, of course, say how long it will take you to fit yourself for this work; and you will have to discover the place by writing to manufacturers, telling them what you want and giving a description of your qualifications.

There is another point to be considered. The successful automobile man's knowledge is seldom confined to any one type of machine. He is apt to be well acquainted with the details of all the principal cars on the market, and more particularly those that compete most directly with the one he is selling. For this reason it would be time well spent to place yourself in a garage or repair shop where all kinds of automobiles are handled. There are establishments in which, though one particular car is made a specialty, others are handled also. Such a garage, if you wished to fit yourself for handling the special car, would be ideal, as all the requirements would be well covered.

Formulas for Finding Horsepower.

Editor THE AUTOMOBILE:

Sir:—If possible, I would like to have you give me the formula for figuring the horsepower of a gasoline engine, using the cylinder diameter, stroke and revolutions per minute. On an average, how near should that rating come to the actual horsepower developed? T. M. S. JR.

Pittsburg, Pa.

No other inquiry reaches this office so often as that for the proper formula for calculating the horsepower of gasoline engines. There are a number of formulas, some exact and others approximate, and each is useful in certain conditions. The most common case is that in which it is desired to know the power that an engine of given cylinder dimensions and speed "ought" to develop, provided it is correctly designed and has a proper carbureter.

To answer this we must assume a mean effective pressure for the cycle and deduct a suitable percentage—say, 20 per cent.—internal friction losses. In small engines it is common to assume a "net" M. E. P. enough smaller than the indicated to allow for friction loss. This net M. E. P. may vary from 40 pounds per square inch in bicycle motors to 70 or 80 pounds in fairly large gas engines. For an automobile motor of not less than 4 inches cylinder bore it may reasonably be taken as 60 to 65 pounds, and it may slightly exceed 70 pounds.

Now, 1 horsepower is 33,000 foot-pounds of work per minute, and a four-cycle cylinder has one working stroke in two revolutions. Consequently, the general formula for the horsepower per cylinder will be

$$H = \frac{A \times L \times R \times P}{2 \times 33{,}000}$$

in which H denotes horsepower, A the piston head area in square inches, L the stroke in feet, R the revolutions per minute, and P the mean effective pressure. If P be taken at its "net" value, H will be the brake horsepower.

If we suppose P to be 66 pounds, the above expression at once reduces to

$$H = \frac{A \times L \times R}{1{,}000}$$

which is simple and easily remembered, and also easily applied if a table of circular areas is at hand to give the value of A. Without the table, A may be found by multiplying the square of the piston diameter by 0.7854.

We can, however, substitute D, the diameter, in the formula, and reduce L to inches. If then P be assumed to be approximately 63 pounds instead of 66 and N be used to represent the number of cylinders, we get the very simple formula

$$H = \frac{D^2 \times L \times R \times N}{16{,}000}$$

for the power which any good four-cycle engine of at least 4 inches piston diameter should develop. For a very good engine we could make the denominator 15,000, which would correspond to a net M. E. P. of 67.2 pounds.

For a bicycle motor the horsepower would be about two-thirds that given by the above formulas.

In the accompanying box are given the various formulas in a form that can readily be preserved.

For Average Four-Cycle Automobile Motors:

$$H = \frac{A \times L \times R \times P \times N}{2 \times 33{,}000} \quad \text{always}$$

$$H = \frac{A \times L \times R \times N}{1{,}000} \quad \text{if } P = 66$$

$$H = \frac{D^2 \times l \times R \times N}{16{,}000} \quad \text{if } P = 63.$$

H is horsepower, A piston head area, D piston diameter, L stroke in feet, l stroke in inches, R revolutions per minute, P mean effective pressure, N number of cylinders.

For bicycle motors H is about two-thirds as great as for automobile motors.

Excessive Wear on Tires.

Editor THE AUTOMOBILE:

Sir:—We have built a 16-horsepower touring car with two-cylinder motor 5 by 5 inches in front. The weight is 1,750 pounds, and we have fitted 3-inch single tube tires. We have run about 250 miles and the front tires are worn down to the canvas already. Please state if trouble is in the tires or in the wheels. W. B.

Jamestown, N. Y.

Your tires are rather small; they should be of at least 3 1-2-inch section, and it would be economy to use 4-inch tires. But if the front tires are wearing out faster than the rear ones, it is because the arms of the steering knuckles are not set at the proper angle and the wheels are consequently dragging sidewise on every curve. If the knuckle arms point forward of the axle, they should be so bent that when the front wheels are straight, lines drawn through the center-to-center axes of the arms will intersect about midway between the front and rear axles. By the axis of the arm is meant the straight horizontal line drawn through the center of the knuckle pivot and the center of the pin in the end of the arm. You can lay this out on the shop floor under the car by using stretched strings for the lines and a plumb-line to give the centers of the steering knuckles and of the pivots at the ends of the arms.

If the knuckle arms point backward, their axes should intersect about one-fifth of the wheelbase forward of the rear axle.

CHICAGO-BUFFALO ROAD MAPS.

Automobilists who intend going on the St. Louis run from New England, New York and the northern tier of States will find of great value a new road map showing in detail the best route from Buffalo to Chicago, issued by William J. Latta, of Goshen, Ind. This is put up in convenient and durable book form, 8 1-2 by 5 inches, leather covered. The route is shown in sections printed on sixteen pages. The scale is four miles to the inch, and each section of the map is laid off in quarter-inch squares representing square miles. The map is compiled from the most recent surveys obtainable and the route was selected after personal inspection by the publisher. The route and towns are shown in heavy black. All forks and turns of more than 20 per cent., cross roads, railroads and town and section lines are shown. Distances between all towns are given, and total distances between the cities. Price, $2.50.

Sectional maps on a scale of two miles to the inch and showing many more details, such as towns off the route and all the roads in the territory covered, are also issued by Mr. Latta showing the route from Chicago to South Bend, Ind. The price of each section of these is 50 cents. Each represents a length of 31 miles. The entire Chicago-Buffalo route is to be carried out on this large scale, but will not be ready in time for the St. Louis run.

THE MAINE AUTO PARADE.

Special Correspondence.

PORTLAND, Me., June 6.—About a score of automobiles, both runabouts and touring cars, were in line in the Lewiston, Me., automobile parade held last Wednesday. The supreme officers of the Knights of the Golden Eagle, in whose honor the event was given, were the guests of honor in the cars.

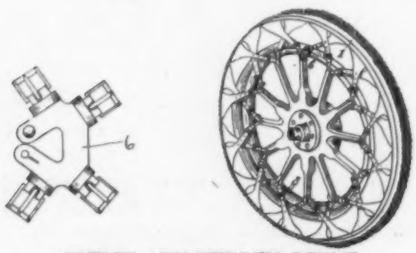
Lewiston has lately come into line as an automobile city and crowds of onlookers gathered around the cars to examine the machinery.

Patents

Tire Protector.

No. 761,491.—T. Houben, of Varviers, Belgium.

A non-skidding device consisting of a leather strip *1* studded with rivets, and having flaps crossing each other in pairs and buckling into leather pieces *6*—see detail—one on each spoke.



HOUBEN ANTI-SKIDDING DEVICE.

Motor Truck.

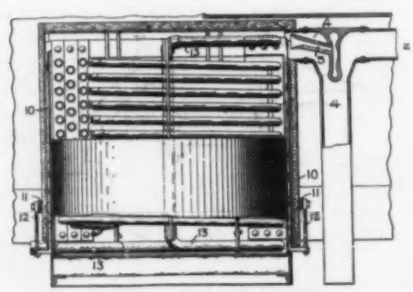
No. 760,509.—E. A. Wright, of Canton, O.

A motor truck in which one engine or pair of engines drives the rear wheels and a second engine or pair drives the front wheels, which are also steerers.

Boiler Jacket and Flues.

No. 761,130.—A. A. Ball, Jr., of Lynn, Mass.

An invention covering means of supporting the boiler—in this case a flash generator—and its jacket in such a way that the boiler may be removed without disturbing the jacket. The latter is secured to cross members *11 11* of the frame, and from these hang bolts *12 12*, on which nuts retain the supports *10 10* of the generator. By unscrewing the nuts the generator may be lowered clear of the jacket. A pipe *13* is used to superheat the exhaust steam and discharge it from the nozzle at its upper end into the receiving tube *5*, from which it passes downward and out into the down draft flue *4* through numerous holes in the bottom of the casting into which *5* discharges. This casting is wide enough to form a baffle across flue *4*, so that wind entering the normally-used horizontal flue *2* will pass down *4* instead of interfering with the fire.



BALL BOILER AND JACKET.

Lubricator.

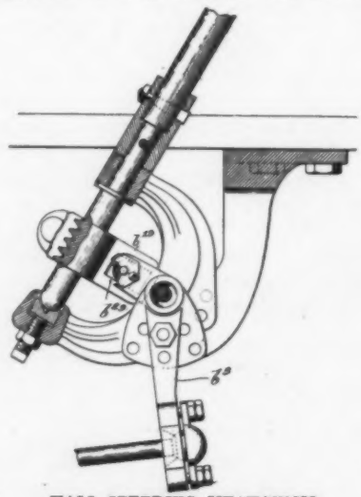
No. 760,876.—H. L. Kinch, of Salina, Kan.

A lubricator intended primarily for steam engines. It has a plunger and spring like those of pressure grease cups, but the escaping lubricant has to pass through a needle valve controlled by a plunger in a small cylinder exposed to the exhaust pressure of the engine. The valve is opened more or less, or not at all, according as the exhaust has much or little pressure—in other words, according to how hard the engine is working. It is apparently designed for stationary uses chiefly.

Steering Gear.

No. 761,223.—D. E. Hall, of Somerville, Mass.

A screw and nut steering gear in which connection is made between the nut and bell crank forming a lobe *b19* at the back of the former, and slotting it to receive a swivel block *b23* on a pin passed through the short arms of the bell crank. The long arm of the bell crank is made in two parts, one of which, *b3*, may be bolted to the other at any one of several angles as indicated by the several pairs of holes. This is to accommodate the device to different requirements as to angle of steering column, it being understood that arm *b3* should hang about vertical when the front wheels are straight.

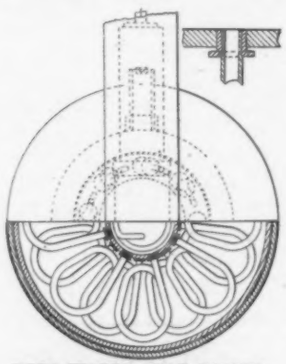


HALL STEERING MECHANISM.

Boiler.

No. 761,394.—A. J. Peet, of Brooklyn, N. Y.

A water tube boiler made up of vertical coils connecting at top and bottom into a central drum as shown. The coil ends are screwed into the drum by bushings having a right-hand outside thread and left-hand inside thread, as seen in the detail.



PEET WATER-TUBE BOILER.

Gas Engine Inlet Valve.

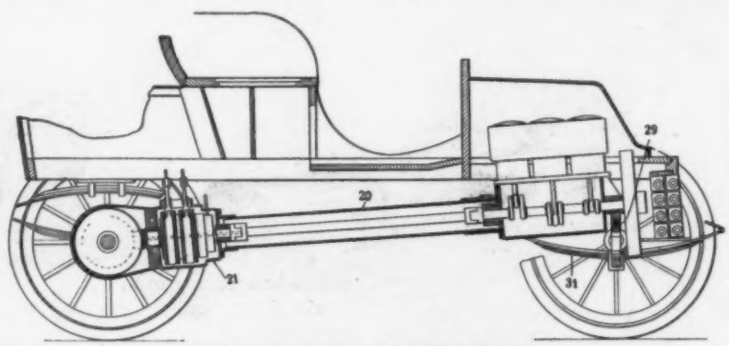
No. 760,920.—H. Power, of Montclair, N. J.

A valve positively opened by a cam acting on two diametrically opposite rollers on a single push rod. A stiff spring between the rod and the valve insures the necessary slight "give" to accommodate lost motion.

Transmission Device.

No. 761,393.—L. J. Phelps, of Stoneham, Mass.

An arrangement for supporting the motor independently of the front end of the body. A rigid tube *20* connects the motor crank case with the casing *21* around the planetary gear case. The latter is rigid with the case surrounding the bevel driving gears, so that the axle, tube *20*, and motor form practically a rigid structure. The motor is supported by a front cross spring *29*, separately from the elliptic side springs



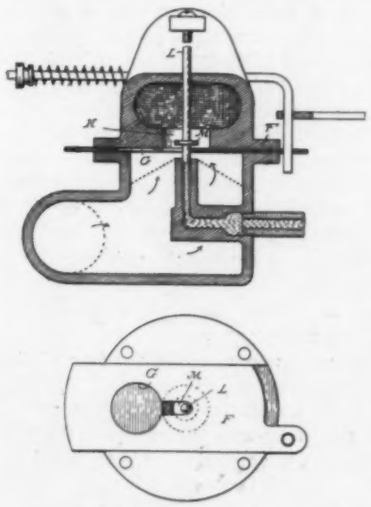
PHELPS TRANSMISSION ARRANGEMENT.

31 on which the body rests. The body therefore may be tilted up, exposing the motor.

Carbureter.

No. 761,392.—R. E. Olds, of Detroit, Mich.

The Oldsmobile carbureter. The air entering from below passes through the irregular orifice *G I* in the throttle slide *F*, shown in bottom view in the lower sketch, and then through the circular opening *H*, from which a short pasage leads to the inlet valve. On its way the air impinges on the flange *M* of the valve stem *L*, lifting it more or less according to the velocity of the air stream. When the throttle *F* is nearly closed, as in the drawings, all the air passing must strike *M*, and when it is wide open only part of the air strikes *M*, thus



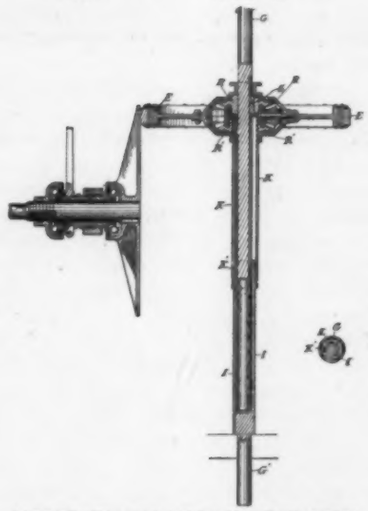
OLDS CARBURETER.

approximately equalizing the gasoline suction at low and high speeds.

Friction Drive.

No. 761,146.—B. J. Carter, of Jackson, Mich.

The friction wheel *E* is on the cross countershaft and contains the differential. One of the main differential gears *R* must therefore drive shaft *G*, while the other gear *R1* must drive sleeve *I* connected with shaft *G1;* and at the same time these gears must be free to move with the friction wheel. This is done by fitting in *R* a loose key *S*, which travels in a keyway or spline in *G;*



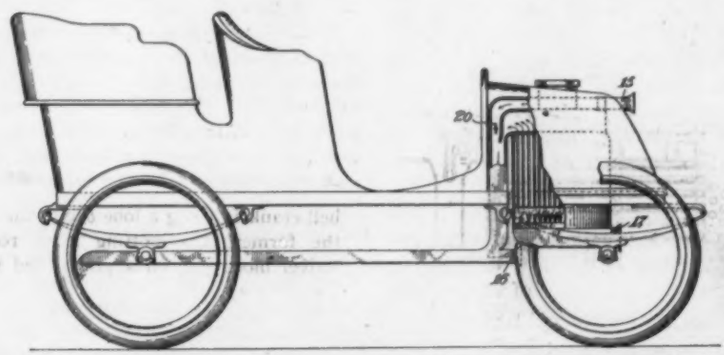
CARTER FRICTION DRIVE MECHANISM.

and by securing *R1* on sleeve *K*, whose outer end has a similar key *K1* working in a spline in *I*.

Boiler Flues.

No. 761,295.—F. E. Grout, of Orange, Mass.

An arrangement of wind scoops *15*, *16*, and *17* as shown, of which the last catches the air for the fire and the other two catch air to assist the draft on the principle of the inspirator. The arrows show the course of the draft. A damper *20* is provided to reduce the assistance lent by scoop *15*, if the draft should be too strong.



GROUT WIND SCOOP AND BOILER FLUE ARRANGEMENT.

Body Design.

Nos. 36,935 and 36,936.—J. Wilkinson, of Syracuse, N. Y.

Body designs of substantially the forms shown in the drawings.

Spark Plug Tester.

No. 761,535.—J. E. Newton, of Fall River, Mass.

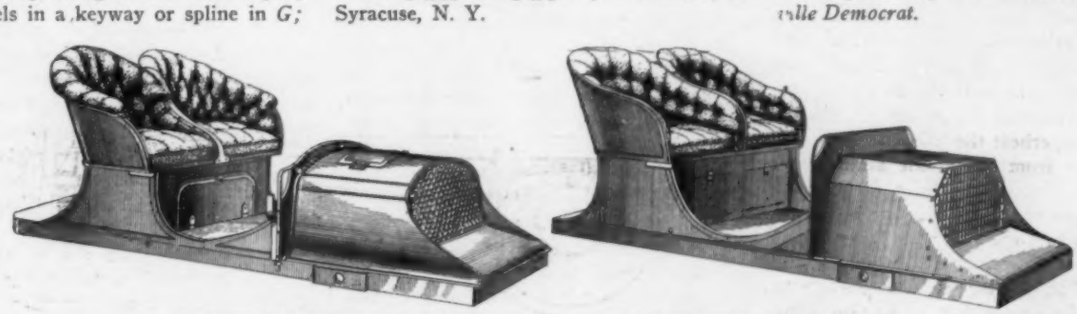
A metal box which may be pumped full of air under pressure, and having a window *a2* through which the spark can be seen. Thus one may determine, by the aid of a tire pump and pressure gauge, whether a plug will give a spark under pressure as well as in the free air. The bushing *a1* may be changed to suit different plugs.

GEORGE M. HENDEE, of the Motorcycle Club of Springfield, Mass., is the first entry in the motorcycle endurance run to be held under the auspices of the Federation of American Motorcyclists from New York to Cambridge, Md. Mr. Hendee won gold medals in the contests of the last two years.

"ROBERT and Jack Holmes have started a garage on Hazel street. While some people know a 'garage' is not a hay-eating ani-

NEWTON SPARK PLUG TESTER.

mal, others might be of the opinion that it is some kind of a hoisting machine, or a new style of shaker machine invented by Jack for use around a coal mine. But it is nothing of the kind. It is a salesroom and repair shop for automobiles."—*Danville Democrat.*



WILKINSON PATENTED DESIGNS FOR BODIES OF FRANKLIN AIR-COOLED CARS.

THE AUTOMOBILE

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ANNOUNCEMENT:

It will interest many of our readers to know that THE AUTOMOBILE will be represented at the Gordon Bennett Race in Germany, June 17, by an editorial staff representative who will report the great event exclusively for this publication. Arrangements have also been completed with three of the leading European firms of outdoor photographers so as to insure a complete pictorial report of the race.

As the day of the race falls on Friday it will not be possible to include a cabled account of the race in the issue of June 18, as owing to the great size of our regular editions we are compelled to go to press earlier in the week.

✵

French Elimination Cars. A study of the tabulated data available regarding the French cup racers discloses several interesting facts regarding current practice and tendencies in very powerful machines. For one thing, all the machines, in spite of the tremendous power of most of them, "weighed in" within the allowed limit of 1,000 kilos (2,204 lbs.) for cars with battery ignition and 1,007 kilos for cars with magneto ignition. Assuming, therefore, that the reported powers of these cars are correct, it is possible, by the use of steel cylinders, copper water jackets, tubular shafts, and the highest grade of material throughout, to build racing automobiles within a weight of 20 pounds per horsepower for the complete car, of which the engine will represent 6 to 7 pounds. The cost of such a machine, at a minimum estimate, would be five dollars a pound or a hundred dollars per horsepower—the latter figure being very near that of the commercial runabout. Nearly all the cars have pressed steel frames, but the De Dietrich and Turcat-Méry have armored wood and the Gobron-Brillié "armored tubing," possibly tubing filled with wood. The two-chain drive still predominates, but direct drive is used in the gear box for the high speed in twenty-four out of twenty-nine cases. The six and eight cylinder propaganda does not seem to have made much headway, possibly on account of the excessive length of the engine.

Of unusual interest are the ignition and inlet valve tables. It may be questioned whether the great predominance of the magneto is due to its greater lasting qualities, or to its much hotter spark as as compared with the battery, and which may well be needed to propagate the flame as rapidly as it must be in a 7-inch cylinder at 800 turns or more. Probably both considerations hold good; and it is noteworthy that but one machine—that of Baron de Crawhez—is said to have given up on account of ignition troubles. Out of twenty-six cars, eleven, representing four makes, had automatic inlet valves, and in three of the four the valves were multiple, a fact clearly showing the disadvantage of large inlet valves when speed and mean effective pressure must be the highest possible.

Detailed reports as to the causes of the several withdrawals are available in but a few cases, from which it is hardly safe to generalize. The comparative immunity from ignition troubles is certainly remarkable, and on the other hand the rather numerous reports of radiator troubles are doubtless significant. The violent vibration of the cars appears to have been responsible for a good many leaks in radiators and tanks, some of which caused only delay, while others could not be repaired in time to keep in the race.

Tire troubles were also reported in considerable numbers. This seems to be a regular feature of long-distance races, and doubtless will continue to be. As the weights of all the cars were nearly equal, the difference between different cars in tire troubles may be laid partly, of course, to pure luck, and partly to the manner of driving. In the British elimination trial several contestants regularly practiced skidding around certain turns, instead of slowing down for them. This is, of course, ruinous to the tires, and it may well be that some of the French contestants attempted to save time similarly, and lost by repairs instead.

As has frequently happened before, the final victory went not to the fastest, but to the steadiest, running car. Théry's Richard-Brazier, rated at 85-horsepower, was one of the lowest-powered as well as lightest cars in the race; but its time for none of the six laps varied over five minutes from its average, and the almost automatic regularity of its running, round after round, elicited admiration long before the result was known.

✵

Precautions in Road Racing. To the reader of the complete report of the elimination race in France, elsewhere in this issue, two reflections will occur with especial force. One is that it has been shown that road races may be run without hazard to the spectators, even at the utmost speeds to-day possible, provided certain precautions in organization and management are taken. The other reflection will concern the enormous outlay and great practical experience demanded.

What the precautions in this particular race included is shown by our report. The roads were "Westrumited" throughout to avoid dust and mud; the turns were filled and banked, and were marked, not by flags, but by great canvas walls visible from long distances. Rigid timing controlled the speed in the neutralized districts, and a patrol of 5,000 soldiers—about 80 to the mile—enforced the rule barring the public from the roads throughout the day. So well was the lesson of the Paris-Madrid race learned that not a spectator was reported hurt, and the drivers were unpursued by the fear of riding down heedless fellow-men. And the cost to the conducting club of these admirable and necessary precautions, of this clockwork management, is said to have been nigh a hundred thousand dollars.

Can such a race be held in America? Quite possibly, if we care to pay the cost. But the cost will be prodigious, and must be carefully weighed. Such matters as preparing the roads, marking the turns, and the necessary officialism of a large event would not be very different for the two sides of the Atlantic. But to police the course, to keep the eager, curious, foolish public from paying in life or limb the penalty of its untaught enthusiasm—that task will be far more heavy, as well as more imperative, here than in countries where road races are a familiar story.

The peasant of the Ardennes Circuit respects the military, and knows the racing automobile well enough to keep out of its way. To the free-born American citizen, the policeman—we have no regular military available for cases like this—is a person to be evaded, not obeyed, and the road racer is a thing to be seen close at hand, whatever the risk. Nothing is more characteristic of American road contests than the anxiety of each spectator to step beyond, in order to see past, his neighbor.

Perhaps a way out may be found by enlisting the volunteer aid of the militia. Militiamen would control the public more effectively than a mob of untrained deputies; and, while they would require payment

for the time lost from regular occupations, this would come to no more than in the case of deputies, and possibly to less. Whatever the method and whatever the cost of policing the roads, it must be done, and done thoroughly, by an organization assuming the responsibility for an American road race.

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A Case of Mistaken Identity. An unfortunate error arising from a confusion of the names of two Indianapolis companies appeared in the issue of THE AUTOMOBILE for June 4 under the engraving of the new eight-cylinder air-cooled racing car built by the Premier Motor Manufacturing Company. Although the Premier Company and the Marion Motor Car Company are both Indianapolis concerns and build four-cylinder air-cooled cars that closely resemble each other in general appearance, they are two entirely distinct organizations and the Premier company, which is the older of the two, has not been succeeded by the Marion company, as implied.

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"Jersey justice" is a phrase that has meant a good many things, but he would be a mean curmudgeon who jumped to the conclusion that it always or often means the kind of justice meted out to John A. Hill by a Jersey justice the other day. That legal luminary, according to report, told Mr. Hill that he didn't believe him guilty of the charge of exceeding the speed limit,—and then proceeded to fine him on general principles, because it would not do to discriminate between lawless and law-abiding automobilists! Some of us are desperately tempted, sometimes, to cast our lot with Dogberry and proclaim the law an ass. This time, however, we are willing to declare the law the perfection of reason, and its administrator and expounder the perfection of—well, the law itself will supply the rest, before it has done with that remarkable justice. We can afford to be patient and await the inevitable.

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A three-and-a-half-year-old boy was discovered in his crib by two New York detectives last week and dragged before Justice Wyatt in the Children's Court charged with having thrown the stone that hit Mrs. Gotshall in an automobile and jeopardized her life. The Automobile Club and Commissioner McAdoo might start a nursery or baby farm if they really are determined to make a few of the city streets safe against such desperate characters.

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Three mules kicked at a passing automobile on a towpath in Rochester and fell into the canal, where one of them was drowned. Let others beware of kicking against the march of progress.

October 8 Set for Vanderbilt Cup Race.

Entries Open to All the World.—Race in United States in 1904 and 1905.—Course on Long Island.

The conditions governing the races for the Vanderbilt Cup were passed upon at a meeting of the Racing Board of the American Automobile Association held on Tuesday, June 7, and the provisions made public. They are substantially as follows:

The cup is to be known as the William K. Vanderbilt, Jr., Cup. It is to be raced for annually, beginning in 1904, the first race to be held on October 8 next, the time for making entries closing September 5. The distance is to be not less than 250, and not more than 300 miles, over regular highways. Tracks are absolutely barred.

In 1905 and thereafter the race is to be held on some date between August 15 and October 15.

After the first race in 1904 challenges must be forwarded before March 15. No postponements on account of the weather will be permitted after a date has been selected by mutual agreement between the holder of the cup and the challenger.

Members of all clubs recognized by or affiliated with the American Automobile Association or the Automobile Club of France will be eligible to compete. This practically makes the contest open to the world.

Not more than ten cars from one country will be permitted to compete.

The races in 1904 and 1905 must be held in the United States, and after 1905 in the country in which the cup is held.

A fee of $300 for each car must accompany challenges. To each starter one-half the fee will be refunded. Non-starters forfeit the entire $300.

The road racing rules of the American Automobile Association will govern races held in the United States, and the road racing rules of the Automobile Club of France will govern races held in other countries.

Competitors must defray all expenses incident to their individual participation in the contest, and must assume all liability for civil suits for damages caused by them.

The course will be selected, when the races are held in the United States, by the American Automobile Association, and that body will take entire and complete charge of all arrangements of whatever nature connected with the contest when held in this country. When held in foreign countries the Automobile Club of France will assume these duties.

Cars must not weigh less than 881 pounds nor more than 2,204 pounds, and must carry two passengers averaging not less than 132 pounds each.

All cars must be weighed in the day before the race, and will draw lots for the order of starting.

Starts will be made at intervals of sixty seconds, and time will be taken from the time a car is due to start, regardless of whether it is actually on hand or not.

The American course will be on Long Island, but its exact location will not be made public until the officials in charge of the event deem it advisable to do so. The race will in each year be in charge of a commission appointed by the body under whose auspices the contest is to be held. The commission for this year is the racing board of the A. A. A., and next year it will be the same, with the addition of the donor of the cup and one member of the Automobile Club of France. When the race is held in a foreign country, the commission is to consist of the donor of the cup, one member of the racing board of the A. A. A. and the Sports Committee of the Automobile Club of France.

The cup, which is exceedingly handsome and costly, will shortly be placed on exhibition for a week or so at Tiffany's.

HITCH IN A. M. A. NEGOTIATIONS.

The plan for the amalgamation of the American Automobile Association and the American Motor League, to be known as the American Motor Association, has received a set-back in the inability of the joint commission to agree upon suitable constitution and by-laws for the combined bodies, the A. A. A. desiring that one delegate should be empowered to vote for the entire club represented by him, while the A. M. L. holds out for individual voting. Owing to this difficulty the meeting of the Executive Committee of the A. A. A., held on Tuesday, June 7, to pass upon the new constitution, was adjourned for a month. Individual members of the committee state that the obstacle is not a serious one, and will doubtless be surmounted very shortly.

FORTY-ONE automobile owners of Omaha, Neb., have registered and paid the fee required by the city ordinance.

ARRANGEMENTS will be made to enter a Columbia car in the Gordon Bennett race in 1905, according to President M. J. Budlong, of the Electric Vehicle Co., if the international race is run again next year.

A MOTORCYCLE relay or message carrying competition between Brest and Belford, a distance of about 600 miles, has been arranged by *L'Auto*, of Paris. The event will be divided into relays of 100 kilometers each. A number of army officers will be detailed by the government to attend for observation purposes.

ST. LOUIS TOUR ROADS.

Augustus Post Reports on Conditions Between Columbus and Philadelphia.

Augustus Post, chairman of the Touring Committee of the American Automobile Association, who returned early this week from a two-weeks' tour over the routes proposed for the St. Louis run, scheduled for July 25-August 10, states that the conditions for the run, in his estimation, will be almost ideal. He found roads in much better condition than he had expected, and they are being continually improved.

On Saturday, May 28, Dr. Taylor, ex-president of the Columbus, O., Automobile Club, and Mr. Post left Columbus, O., escorted by a number of automobiles, and at Zanesville found themselves in the midst of a large parade, and, their errand being explained, they were placed in the van, after which they took luncheon and again took to the road. After the day's run over hilly and somewhat sandy, but interesting roads, they stopped for the night at Wheeling. The worst objection to the roads is the fact that they are very hilly. The surface is good, however, and the scenery fine. Next day the run was made to Cumberland, 127 miles. Mr. Post believes this piece of road to be the finest he has ever travelled, taking into consideration road conditions, scenery and points of historic interest. The government has spent $7,500,000 on this road in years gone by, and iron mile-posts were erected, some of which are still standing, while others have been removed and placed in front of residences as valuable relics. An interesting fact is that at one time sun-dials were located at various points for the convenience of travellers; but though the stone bases on which they were placed are still standing, the dials have been removed by curiosity hunters. As for the road, it is uniformly good, the only disagreeable features being the water breaks, which occasionally require the car to come to a full stop. The objects of interest along the route are numerous and curious, relics of the days of stage-coach travel, for which this road was quite celebrated. The famous Pony Express, so widely used in the far West, originated on this road. The Baltimore and Ohio R.R., which was originally built as a horse railroad, follows the road nearly all the way to Cumberland. When this railroad shortened the time between Wheeling and Cumberland from 7 days to 3 days, it was considered a great stride in rapid transit.

Mr. Post remained in Wheeling over Decoration Day, and on Tuesday proceeded to Hagerstown, where lunch was taken, and the afternoon journey brought him to Chambersburg. Between the two latter places the roads are almost uniformly good, and the scenery, as usual, beautiful, the only fault being the long and stiff grades. A portion of the highway is paved with blue stone macadam. The distance between Chambersburg and Harrisburg was covered in an after-dinner ride of three and a half hours. Leaving Harrisburg on Wednesday, June 1, the run was made to Reading by way of Carlisle and from thence to Philadelphia, which was reached at 7.30 P.M. Philadelphia was left at 4.30 the next afternoon, and New York, the terminus of the trip, was reached at 11.30 P.M., completing what Mr. Post considers an exceedingly delightful and perfectly practicable trip.

N.Y. SHOW DATES UNCHANGED.

Decision Reached at Meeting of Executive Committee of N. A. A. M.

The regular monthly meeting of the Executive Committee of the National Association of Automobile Manufacturers was held in the office of the Superintendent of Automobile and Vehicle Exhibits, Transportation Building, St. Louis Exposition, on Wednesday, June 1, only three members being absent. A resolution was adopted unanimously closing the existence of the old Association, and a meeting of the Executive Committee of the new, or incorporated Association, followed immediately, business being taken up where the old organization had left off. The reports of the Freight Committee and the Show Committee were received and discussed at length. The Freight Committee reported that members of the Official Classification Committee had expressed their belief that the present freight rates on automobiles are not excessive and that the rates on horse-drawn vehicles are too low. While some members of the O. C. C. seemed willing to make concessions, all seemed to desire delay until the October committee meeting.

The report of the Show Committee, which has been in the hands of the members of the N. A. A. M. since the May meeting, was brought up for consideration, and it was decided that the dates of the National Show for 1905 should remain unchanged, subject to the approval of the Madison Square Garden Company, whose approval has already been unofficially given, and of the Automobile Club of America. At the next Automobile Show the concert hall, which was last year used as a restaurant, will be occupied by exhibitors, and the width of the gallery spaces will be increased. A total of 7,200 square feet of additional space will thus be made available for exhibits. Space will be allotted by the square foot only.

After a discussion on the matter of the limitation of local shows it was suggested that the organizations which have conducted local shows be invited to meet a committee from the N. A. A. M. to discuss the matter, and this will probably be done in the near future.

A LARGE automobile of twenty-passenger capacity has supplanted the old-fashioned stage as a means of transportation between Romney and Burlington, W. Va.

BOAT BUILDERS ORGANIZE.

National Association Formed in New York at Meeting Held June 6.

The rapidly growing importance of the marine motor and launch industry has suggested to some of those directly interested the desirability for timely action of such a nature as has sooner or later proved necessary in other industries, and for some time past a movement has been quietly under way for the formation of a permanent association. The first important step was taken on May 16, when a preliminary meeting was held at the Hotel Manhattan, in New York; a temporary organization being effected. At this meeting some of the leading builders of hulls and motors, including the Gas Engine & Power Co. and Charles L. Seabury & Co., the Lozier Motor Co., and Smith & Mabley, were represented. Articles of incorporation were taken out and the first meeting was called for June 6 at the same place.

The call sent forth with the constitution and by-laws met with a hearty response, most of the leading builders of the United States being represented personally or by letter at the meeting, which was called to order by H. A. Lozier, Jr., with E. W. Graef as temporary secretary and treasurer. The constitution and by-laws were adopted and individual members were elected representing the following concerns: Active: Lozier Motor Co., New York and Plattsburg; Standard Motor Construction Co., Jersey City, N. J.; Bridgeport Motor Co.; Gas Engine & Power Co., and Chas. L. Seabury & Co. Cons., New York; Penna. Iron Works Co., Philadelphia; Buffalo Gas Motor Co.; Charles A. Strelinger Co., Detroit; Toquet Motor Co., Fairfield, Conn.; A. Massenet, New York; Matthews Boat Co., Balcom, Ohio; Isham Co., Inc., Norwich, Conn.; F. S. Nock, Mystic, Conn.; Delaware River Motor Co.; Palmer Bros., Cos Cob, Conn.; Standard Boat Co., Steinway, Long Island; E. Gerry Emmons Co., Swampscott, Mass.; Eagle Bicycle Co., Torrington, Conn.; Cushman Motor Co., Lincoln, Neb.; Wolverine Motor Works; Lacey Bros., Chase Pulley Co., Providence, R. I.; A. Barrett's Sons; Pearson Boat Construction Co., Detroit, Mich.; Termadt & Monahan; Truscott Motor Co., St. Joseph, Mich.; Pierce Engine Co.; White Craft & Power Co., Port Richmond, Staten Island; Smalley Motor Co.; Mianus Motor Co., Mianus, Conn.; Outing Boat Co.; Stamford Motor Co.; Smith & Mabley, New York; Milton Point Ship Yard, Rye, N. Y.; Electric Launch Co., Bayonne, N. J.

The following Associate Members were elected: E. W. Graef, J. D. Negus, A. Patterson, J. J. Prial, W. P. Stephens, H. S. Gamble, Wm. Roche, F. R. Remy, F. Comstock, D. A. Richardson, M. S. Logue, C. R. Durkee.

Though of necessity centered in New

York, the Association is intended to be thoroughly national in character, and to include every section. Already the Middle West is well represented in the membership, and it is expected that it will be in the board of officers as well.

The objects of the Association are to promote the interests of the launch and motive engine industry through all concerned with it as manufacturers, dealers or in journalism. It is proposed to control exhibitions, to oppose hostile legislation and to encourage the technical development of the industry. The active membership is limited to individuals connected with the building of hulls and engines; the associate membership is open to makers of fittings and appliances and representatives of yachting and trade journals.

At the next meeting, on Monday, June 27, at 4.30 p. m., at the Hotel Manhattan, an election will be held for an executive committee of fifteen, which will elect from its members a president; first, second and third vice-presidents, and treasurer; and, if it considers it necessary, a secretary, who need not be a member of the committee.

CHANGES IN BOSTON ENTRIES.

Tracy to Drive in Readville Races, Postponed a Second Time.

Special Correspondence.

BOSTON, June 7.—When the postponed Memorial Day race meeting of the Massachusetts Automobile Club had to be postponed a second time last Saturday to this week, Saturday, on account of rain, the automobile enthusiasts began to wonder if there would really be a race meet. It was out of the question to use the track a week ago because of the steady downpour of rain. The first sunshine came Saturday, but the track could not dry out in time for racing.

Several changes in the list of entries were inevitable. The Decauville racer was the first defection, J. W. Hillyard taking Mr. Huggin's car back to New York. The next was the Brokaw Mercedes, which was spirited out of town because Bernin, the chauffeur, accidentally ran over and injured a child in one of the suburbs, and a suit for damages was instituted, a sheriff starting on a search for the car. An accident to H. B. Hills' big Richard-Brasier racer on Saturday took that car out of the race and spoiled the chance of a match between Mr. Hills and Mr. Bowden, although Mr. Hills may arrange to drive a Fiat car in Saturday's meet. Another match was also spoiled because the Pope company decided not to enter any more cars to race on a circular track, its Pope-Toledo having come to grief in practice on the Readville track before Memorial Day. This leaves A. E. Morrison and his Peerless looking for a competitor in stock touring cars.

But the entry list was reopened, and as the committee has declared the three heats run off on Memorial Day as set aside, the races next Saturday will be complete in themselves. Among the new entries received is Joe Tracy and the 1903 Gordon-Bennett Peerless, who will ride in two events.

William Wallace in his new Renault *Black Death*, may race against Mr. Bowden in place of Mr. Hills.

PRINCE PU VISITS BUFFALO.

Chinese Heir Apparent Evinces Much Interest in Automobile Making Processes.

Special Correspondence.

BUFFALO, June 6.—Prince Pu Lun, while in Buffalo on a visit last week, was entertained by the Chamber of Commerce and given several automobile rides. E. R. Thomas, of the E. R. Thomas Motor Company, was a member of the committee appointed to look after the Prince's welfare. While in St. Louis, Prince Pu purchased a Thomas automobile and for two weeks Cal Paxton, of the local factory, acted as chauffeur for the Prince at St. Louis.

During his stay here the Prince and his party were taken in automobiles from the Iroquois Hotel to the Thomas factory for an inspection of the plant. At the office of the company the visitors were shown a picture taken at Shanghai, China, last year, in which Prince Pu Lun and Wan Kai Kah, his secreteary, were seated in a Thomas car, that being the first automobile in which the Prince had ever had a ride. The party was then shown through the plant, the Prince evincing great interest in the different mechanical appliances. He was particularly pleased with the automatic frame riveting machine.

Before leaving the works Prince Pu Lun and the attendants were photographed in a group with the workmen employed at the plant.

DETROIT AUTO SCHOOL FALL PLANS.

Special Correspondence.

DETROIT, June 6.—The closing of the first course in the Y. M. C. A. school of automobile instruction in this city was celebrated last week by a banquet at which Educational Director W. B. Van Akin acted as toastmaster. The principal address of the evening was made by Dr. Rudy, who had just been elected chairman of the automobile committee by the Y. M. C. A. directors. He said that the course of lectures just completed was only a preliminary one and that next fall when the school reopens the number of students will be much larger. The school will then be divided into classes, the first being for beginners, the next a machinists' class for all who successfully pass the examinations in the first class and for others who are of mechanical bent and have some knowledge of machinery; a third class for persons who wish to learn to drive automobiles, and a fourth class in thermo-dynamics. All departments will be closely allied, he said, and will work in perfect harmony to make a systematic course.

EDGE AND THE GORDON BENNETT.

Special Correspondence.

LONDON, May 3[illegible].—S. F. Edge has followed up his protest against the non-inclusion of Clifford Earp in the British Gordon-Bennett team by his own withdrawal from the team.

At a meeting of the Executive Committee of the A. C. G. B. I., Lieut.-Col. Mark Mayhew moved that the report of the Race Committee be referred back to permit the inclusion of Mr. Earp, on the ground that the decision, arrived at a few hours after Earp's accident, was premature in view of the official announcement that it would not be made till the committee's return to London. This motion was lost by a considerable majority.

Thereupon Mr. Edge sent the club a letter in which, after pointing out that Earp had just driven the same car, meanwhile repaired, 250 miles to take part in the Nottingham Hill climb, and had made third best time in that climb, he requested permission to withdraw from the team as "a record of sporting disapproval." He added that three "suitable" Napiers would be at the committee's disposal for the race, if needed, and ended by pointing out that, of English aspirants of Gordon Bennett cup honors, "so far Napier cars have been the only ones which have been fit to run the day of the race."

Hargreaves and Stocks, drivers of the substitute 60-horsepower and 50-horsepower Napier cars, have expressed their willingness to run.

S. F. Edge has finally consented to be a member of the English cup team, according to cable dispatches, the secretary of the Automobile Club of Great Britain and Ireland having notified him that he would not be permitted to withdraw his entry owing to the disqualifying of his Napier team mate Earp by the club committee. He has promised to make all preparations to help his team mates, S. Girling (Wolseley) and Charles Jarrott (Wolseley), to capture the trophy.

THE largest yacht afloat driven by gasoline engines is *Edithia*, built at Ayer's yard, Nyack, N. Y., from designs by William Gardner and launched June 2. This craft is 115 feet over all, 103 feet on the water line, 15 feet 10 inches beam and 5 feet draft. Her power plant will consist of two six-cylinder Standard gasoline engines of 300 horsepower each, which will drive twin screws. The cylinders have a bore of 12 inches and a stroke of 14 inches. Doubtless all of the 600-horsepower will be needed, as the contract calls for a speed of twenty-three miles an hour. Tank capacity is provided for 2,200 gallons of gasoline. The boat has a flush deck with a torpedo-boat turtle-back forward.

WORCESTER CLUB CARNIVAL.

Parade and Track Events of Local Club Successful Despite Rain.

Special Correspondence.

WORCESTER, Mass., June 4.—Despite lowering clouds and a discouraging drizzle, the automobile parade, show and race carnival of the Worcester Automobile Club went off last Monday as planned. Although the dealers and owners of Worcester County were allowed to compete, the entries, for the most part, were by autoists of this city and this developed considerable enthusiasm among the spectators. The attendance at the Fair Grounds was nearly 1,000.

The exhibition of machines and accessories opened in the large hall on the Fair Grounds at 8 A.M. and attracted a large number of people.

The races were well contested and run off with snap one after another, but the street parade was easily the feature of the day. The line was formed at 11.30 A.M. at Park avenue and Highland street, with more than 100 machines in line. Chief Marshal J. Perley Kilgore was on hand at 11 o'clock with several motorcyclists who aided in getting the cars into position. The line moved down Park avenue at a dignified speed well within the law. Nearly every one of the one hundred cars carried an American flag and all members of the local club carried the new white silk pennant decorated with the club emblem in red, green and gold. The route of the parade was through the principal streets and center of the city to Lincoln Square, then out to the Fair Grounds through Institute Park and West Boylston street.

Immediately upon arrival at the grounds luncheon was served. Then rain commenced to fall but after a consultation of the racing committee it was decided to go ahead with the races, and the first heat of Class 1 was started in a shower that soaked the clay and loam track.

In spite of these adverse conditions over a thousand people had gathered in the grand stand and the ardent spirits of the track committee being up, the full list of events, eleven in all, were run off without a hitch or accident on a very heavy and soggy half mile course. It was not considered safe to run more than three cars around the track at a time, so all races having more than three entries were run off in heats and finals.

An interesting feature of the program was an obstacle race, as it gave an exhibition of just what control an operator has of an automobile in a crowded street. The operator who could wind his machine in and out between six settees and horses that were ten feet long and placed twenty feet apart, circle around two of the judges and then return through the horses and settees in the least time and without hitting any of the obstacles was declared the winner.

W. J. Forbes, with an eighteen-foot Tuttle motor boat, gave several exhibition runs over the Worcester Sailing Association's course on North Pond adjoining the racecourse. Judging from comments made by some of Worcester's Marine Corps, the trim little boat will stay in Worcester water and possibly more will be ordered like it before the boating season is much older.

From a financial standpoint the Worcester Automobile Club is little if any ahead of the game, yet the memebrs feel highly satisfied with the meet and are already planning another to take place at a date not far in the future.

The results of the track events were as follows:

Two miles for runabouts—Asa Goddard (Olds), first; J. S. Gilchrist (Olds), second. Time, 6:02.

Two miles, light cars—Joseph N. Magner (Stevens-Duryea), first; M. E. Dixon (Stevens-Duryea), second; Asa Goddard (Buckmobile), third. Time, 4:31 1-5.

Three miles, two cylinder cars—M. P. Whittall (Pierce Arrow), first; W. G. Schmunk (White), second. Time, 6:31 2-5.

One mile, electrics—M. E. Dixon (Studebaker), first; Ledyard Bill (Columbia), second. No time taken.

Two miles, racing machines—M. P. Whittall (Arrow), first; J. N. Magner (Stevens-Duryea), second; Russell Drisko (Waltercar), third. Time, 4:08 4-5

Two miles, motorcycles—E. J. LeClaire (Rambler), first; P. W. Wood (Indian), second; H. F. Clark (Rambler), third. Time, 3:47 2-5.

AUTOMOBILE PARADE IN WORCESTER

Obstacle race—J. W. Magner (Stevens-Duryea), first; Asa Goddard, second; M. E. Dixon, third. Time, 39 seconds.

Five miles for *Telegram* Cup—M. P. Whittall (Arrow), first; W. G. Schmunk (Waltercar), second. Time, 10:00.

CROSS-JERSEY HANDICAP RUN.

Philadelphia Club Members to "Tour" to Atlantic City for Lippincott Cup.

Special Correspondence.

PHILADELPHIA, June 6.—The Automobile Club of Philadelphia is giving gratifying evidences of renewed energy. Last week's race meet having left the question of speed superiority of members' cars unsettled, owing to all the entrants for the members' five-mile race having withdrawn, the club's tours and runs committee has decided to accept the offer of George T. Lippincott, of Atlantic City, to hang up a cup for a handicap "run" for A. C. of P. members only, from Camden to Atlantic City. It is expected that this event will settle, for this season at least, the much-discussed question as to which car is the fastest in the various classes.

Next Saturday, June 11, has been selected by the committee, and as the "run" is a handicap, it is naturally expected that the entry list will include the car of every member who thinks his machine is the best in its class, and that means about all of them.

The start will take place from the Pennsylvania Railroad ferry house at the foot of Market street, Camden, at 9 o'clock in the morning, the cars being sent off at five-minute intervals. Each contestant in the "run" will carry a time card upon which the judge at the start will inscribe his name and the time of departure. The judge at the finish will record the time of arrival. No restrictions will be placed upon the contestants as to route; there will be no intermediate checking points, and each driver upon receiving his card will proceed to "tour" to Atlantic City by whatever route he pleases. It is to be particularly impressed upon the contestants that the event is to be a run and not a race, and that borough and State speed laws must under no consideration be fractured.

A handicap of an even half-hour will be given one-seated cars over the two-seaters, the time to be deducted from the smaller cars' cards at the finishing point in Atlantic City, which will be announced before the start. This scheme of handicap is likely to cause trouble, as several members own single-seated cars of a power in some instances equal to that of many two-seated machines.

No class of motor vehicle is barred from the run, the only stipulation being that each shall be in full touring trim and shall have aboard the full complement of passengers it is designed to carry. The machines must be operated by the members owning them, although a member engaged in the automobile trade, and not personally owning a

machine, may enter and run the machine he is accustomed to using.

Although the instructions regarding speed will be doubly emphasized at the start, and each contestant duly warned as to the liability he incurs of languishing in a Jersey dungeon should he fail to observe the committee's instructions, it is predicted by the wise ones that some of the 'tween-town portions of the road—especially beyond Hammonton—will be "burnt up." The favorable lay of the land, the smoothness of the road and the absence of turns between Hammonton and the sea is a tempting combination, it must be admitted.

G. A. R. VETERANS PARADE IN AUTOS.

Special Correspondence.

MINNEAPOLIS, June 4.—An interesting feature of the Memorial Day parade in this city was the use of automobiles for carrying the veterans of the Grand Army of the Republic who were too old and feeble to march with the procession. Heretofore the veterans have been provided with carriages, but this year the G. A. R. committee appealed to the members of the Minneapolis Automobile Club, who responded generously. The machines were given a prominent position in the line of march at the head of the third division, Captain A. A. Kelly, marshal of the division, occupying the first car. There were fourteen machines devoted to the veterans and they attracted a large share of the attention of the thousands of spectators who gathered all along the line of march, as shown in the photograph.

G. A. R. VETERANS RIDING IN AUTOMOBILES IN MINNEAPOLIS MEMORIAL DAY PARADE.

AUTO PARADE IN COLUMBUS, JUNE 18

Special Correspondence.

COLUMBUS, O., June 6.—Entry blanks are being issued this week for a big automobile parade to be held Saturday, June 18. A prize cup has been offered for the best decorated machine in line, and it is expected that there will be a large turning out of flower and flag-bedecked cars. Probably the majority of the vehicles will be undecorated, however, as the parade committee is urging all automobilists in the city to take part, whether they decorate their machines or not.

COUNTRY CLUB OPENING.

New Birmingham Road Home of Detroit Club Ready for Use.

Special Correspondence.

DETROIT, June 6.—The new country clubhouse of the Detroit Automobile Club will be opened officially for the season this week. There will be no formal run to the opening, but the first club run of the season will soon be made, the matter being now in the hands of a committee.

The clubhouse near Birmingham has been completely decorated and furnished throughout in an appropriate style. All of the interior woodwork is Flemish oak, with furniture to match, and the upholstering is for the most part in leather. The second floor will be devoted entirely to the use of the wives and daughters of the members, with the exception of three living rooms occupied by the steward and his wife.

Two mammoth shelter tents donated by the Ford Motor Company and the Peerless Motor Car Company, have been raised outside for use by dinner parties during warm summer evenings, and a third tent has been put up near a grove southeast of the house where picnics will be held.

The Detroit club will make no effort to promote a race meet for Grosse Pointe this year. The members feel inclined to leave the matter entirely to the manufacturers of the city.

The record for the trip from Detroit to Pontiac, a distance of 26½ miles, was broken last week by Truman H. Newberry, who made the trip in a Packard Voiture Légère in 42 minutes.

SYRACUSE RACE MEET.

Club to Promote Races if State Fair Track Can Be Secured.

Special Correspondence.

SYRACUSE, June 6.—The Automobile Club of Syracuse has taken up the matter of holding an automobile race meeting on the mile track at the New York State Fair Grounds here in September, and President Willet R. Brown has been appointed a committee of one to try to secure the track for one Saturday in September, the 17th if possible, for the meet. If he is successful, an application will at once be put before Chairman A. R. Pardington, of the race committee of the A. A. A., for a sanction.

The club has received many letters for information about Syracuse races from chauffeurs and car owners, which seems to indicate that the mile track here is well liked.

MISCELLANEOUS NOTES.

The factory of the old Conrad Motor Carriage Company, in Buffalo, which is well equipped for automobile work and contains about 40,000 square feet of floor space, has been purchased by the E. R. Thomas Motor Company for $12,000 and will be known as Plant No. 2. This is the fourth plant operated by the Thomas company. A new building will be erected in the rear of the present factory to be used for machine and assembling shops and foundry work.

We are informed by the Western Motor Car Co., of Los Angeles, California, which has branches in Pasadena and San Diego and the direct agency for Southern California for the Pope-Toledo, Pope-Hartford and Pope-Tribune cars, that it is the concern that sold four-cylinder Toledo cars to Dr. Milbank Johnson and Michael Cudahy, of Pasadena, and not the Pope-Toledo Touring Car Co., to which these sales were credited in THE AUTOMOBILE of May 21.

The Richmond Automobile & Cycle Co., Richmond, Ind., has sold out to the Richmond Plating Works, of the same place, and not to J. B. Dugan, as was stated in a previous issue of THE AUTOMOBILE. The new owners will carry on the business on a larger scale, a new building having been added for the purpose.

E. C. Bald, who has spent the last two or three months in the factory of the Electric Vehicle Co., in Hartford, drove a Columbia car in the Charter Oak races on Decoration Day. He made the fastest times of the day in exhibition runs with a regular road model with tonneau removed.

The dimensions of the new building of the Pence Automobile Company, 717 and 719 Hennepin Ave., Minneapolis, Minn., which were given in a recent issue as 30 by 150 feet, should have been given as 50 by 130 feet, the figures having been accidentally transposed.

Current News from New York.

Harlan W. Whipple's big special car arrived in New York last Saturday, having been driven up from Philadelphia over the Jersey roads by Designer Wasson. The machine is a monstrous one, having a wheelbase of 126 inches and weighing about 3,000 pounds. It was built by the Scott Iron Works, of Baltimore, and is to be fitted with a special tonneau body by Quinby & Co., in Newark. The rear portion of the body will seat seven passengers in addition to the two carried on the front seats. The car has a pressed steel frame and a four-cylinder upright engine, the cylinders of which have a bore of 6 1-16 inches and a stroke of 6 inches. Drive is by central shaft and ignition by magneto. It is estimated that the machine will develop 80-horsepower and be capable of a speed approximating sixty miles an hour. As the machine reached New York it was fitted with rough board seats and a crude metal cover over the engine and carried a large tool and storage box at the extreme rear of the platform. While it will be used primarily as a touring car, the machine is likely to be seen occasionally on the track if it develops the speed anticipated. The car was laid up during the week at Banker Brothers' garage on 38th street for tire repairs, the unusually heavy weight on the pneumatics causing them to cut along the channel rings during the 100-mile trip from Philadelphia.

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It is rumored in automobile row, New York, that a race may be arranged at no very distant date between W. Gould Brokaw's 60-horsepower F. I. A. T. racer, driven by Claude Fogolin, and Nathaniel Huggins' 40-horsepower Decauville, driven by himself. Doubtless this rumor originated in the remark made by Mr. Partridge, of the Standard Automobile Company, New York, that judging by the performance of the F. I. A. T. car at the Boston meet it was no match for the 40-horsepower Decauville. No definite arrangements for a race have been made, though it is understood that all concerned, including E. R. Hollander, senior member of the firm handling the F. I. A. T. car, are in a very willing mood.

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Police Commissioner McAdoo is waging vigorous warfare against the toughs, big and little, who make the automobilist take his life in his hand when he travels through certain East Side streets. The present method of working is to send out an automobile containing several policemen in plain clothes and a woman, the latter to lend the expedition the appearance of an ordinary automobiling party. The scheme has worked like a charm. Inspector Schmittberger and his party were assaulted last Sunday and made several arrests, the prisoners ranging in age from irresponsible children to young men, some of whom have been held in bail. The principal effect of this mode of action has been, so far, to make the rowdies somewhat more careful as to the character of the persons they attack; but it is hoped that it will not be long before the stone-throwing is practically stopped. Commissioner McAdoo says he will not rest until this has been accomplished. One of the miscreants was held in $500 bail pending final disposition of his case.

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John A. Hill, proprietor of the *American Machinist*, who was arrested and fined recently in Chatham, N. J., for exceeding the speed limit, is pushing his case against the authorities vigorously and will not rest until a final decision has been reached. James B. Dill and U. S. District Attorney John B. Vreeland have been retained as counsel. There are several aspects of the case which, though not unfamiliar to automobilists, look rather curious to the uninitiated. The arrest was made by a marshal named Coon, who stated first that he timed the car for a certain distance, then on being informed that this time would indicate that the speed was legal, said he wasn't sure of the time, but he knew by appearances that the automobile was going too fast. Thereupon the justice, after remarking to Mr. Hill that he did not think he was guilty, fined him because, he said, he couldn't make fish of one and flesh of another, and he had just fined another automobilists for the same offence. A number of witnesses, all of whom were thoroughly competent to judge of speed, declared that Mr. Hill was not running up to the legal rate; and it is also noteworthy that just before being arrested, Mr. Hill refused the request of his young son to accelerate his speed to overtake a car which had just passed Mr. Hill's machine, on the ground that he did not want to go faster than the law allowed.

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"Funny things happen sometimes," remarked the garage manager, reflectively. "I know an engineer—and a right smart one, too—who invented a gasoline motor that was going to be the whole thing. He explained it to some wealthy men, and his ideas seemed so good and his reasoning so plausible and correct that he got all the capital he wanted to go ahead, so he organized a company and had the business end of it in great shape in no time. But there was one little drawback, the last I heard of the matter, and that was that the inventor couldn't, for the life of him, make the motor go."

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Power boat races will be held Saturday, June 11, by the Columbia Yacht Club at Eighty-sixth street and the Hudson River. Two courses will be used, one six and the other eight nautical miles long. The races range in length from sixteen to 32 miles. All events will be held under the rules of the American Power Boat Association and will be open to the boats of members of that organization, the Larchmont, New York and Eastern Yacht Clubs.

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Windsor T. White, president of the N. A. A. M. and vice-president of the White Sewing Machine Co., and party, sailed on the *Lucania* on June 4 and will attend the Gordon-Bennett Cup race in Germany. After a tour of England and Europe in White steamers, the party, consisting of Mr. and Mrs. White and Mr. and Mrs. Charles Hotchkiss, of Cleveland, O., will return in time to participate in the St. Louis tour.

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Both the new F. I. A. T. and the new Smith & Mabley racing auto-boats will probably be in the water by the time this reaches the reader's eye. The time set for the match races leaves but little opportunity for the necessary tuning up, and work on the racers is, accordingly, being pushed with great energy.

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The Royal Tourist car is now sold under a twelve months' guarantee by the Duerr-Ward Company, which handles this machine in New York City. The concern believes, from practical tests made, that this can easily be made good. This is said to be the first one-year guarantee ever made on an automobile in this country.

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The first Saturday run of the Automobile Club of America will be held to-day, the objective point being the Manhasset Bay Yacht Club, Port Washington, one of the clubs where the members of the A. C. A. have members' privileges for the summer season.

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E. R. Hollander, of the firm of Hollander & Tangeman, American agents for Italian automobiles, has expressed his willingness to back the F. I. A. T. 60 horsepower racing car for $1,000 for a 300 mile road race against any car, bar none. It is said that Barney Oldfield will propose to the Winton company that such a match be arranged between the Winton *Bullet* and the F. I. A. T. white racer.

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The management of the Empire City trotting track at Yonkers is considering the advisability of holding an automobile race meet some time in July, the 16th having been mentioned as a possible date.

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The Tennant Auto-Tire Company, of Springfield, Ohio, has opened a New York office, under the management of M. A. Cornell & Co., at 1900 Broadway, and also a Chicago office at 1461 Michigan avenue, of which J. M. Anthony is manager.